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Gleanings in Bee Culture

June 1954

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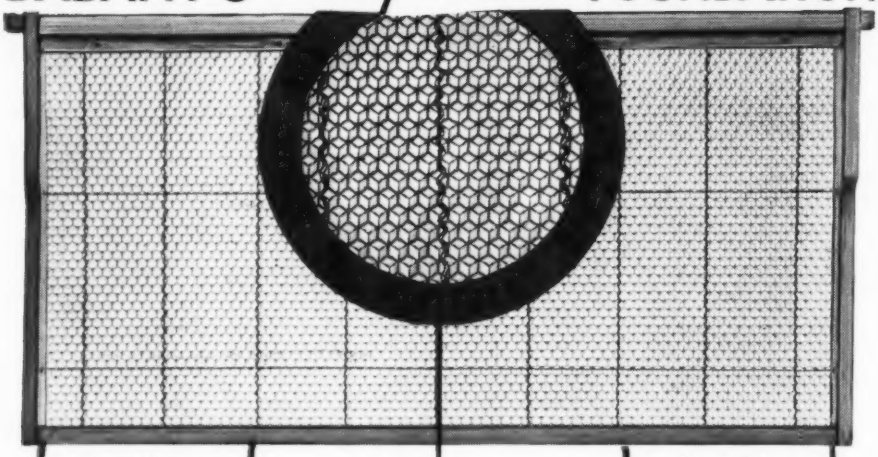

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Gleanings in Bee Culture

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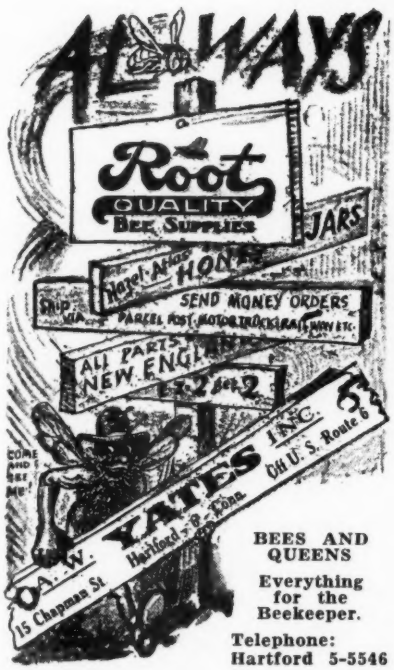

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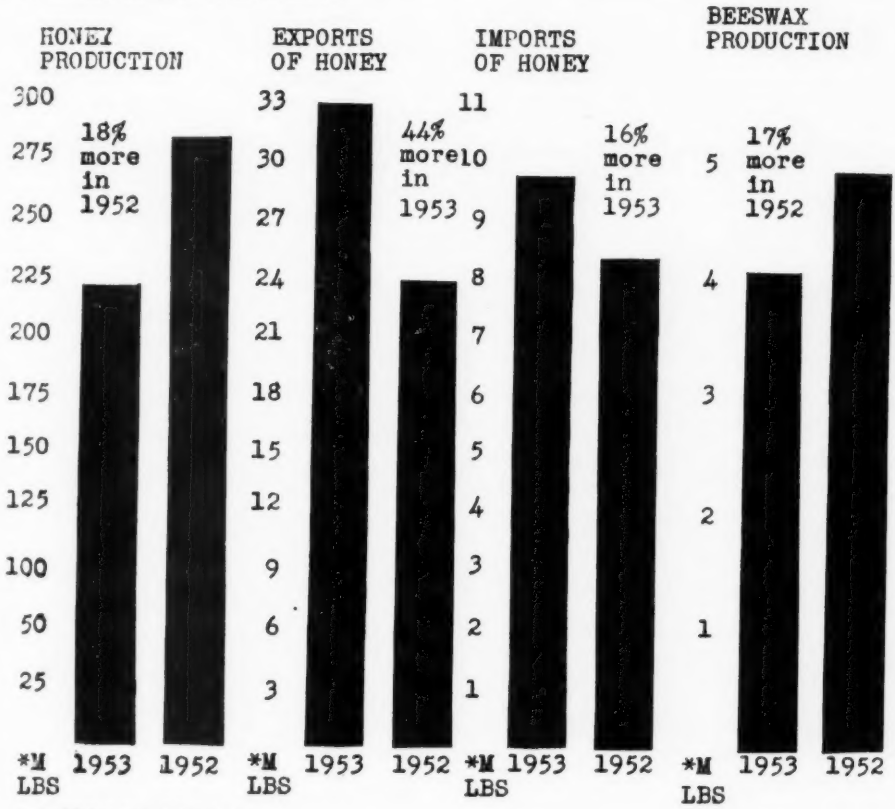
Monthly HONEY Report

United States Market

This graph is based on material supplied by the semi-monthly honey report of the U. S. Department of Agriculture.



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24/1's 5.45- 5.75
glass,
24/16-oz. 6.50
Amber, paper,
24/2's 7.00- 7.50

REGINA: Mkt. steady.
Sask., metal,
12/4's .....$ 9.75-10.00
past., paper,
48/1's 11.40-11.55
metal,
24/2's 11.20-11.35
12/4's 11.00-11.05
6/8's 10.85-10.95

Vancouver: Mkt. steady.
Alta., past., carton,
24/1's .....$ 5.65
24/2's 10.65
metal,
24/2's 11.20
12/4's 10.70
liquid, past., glass,
24/12-oz. 6.05

OTTAWA: Mkt. steady.
Ont., past., paper,
24/1's .....$..5.75- 5.80
metal,
24/2's 10.75-11.55
12/4's 11.50-11.65
Golden,
12/4's 8.10- 8.50
Amber,
12/4's 8.50- 9.75
Man., White,
12/4's 11.75

MONTREAL: Mkt. firm.
Que., White, metal,
24/2's $10.75-11.50
12/4's 10.50-11.00
glass,
24/8-oz. 4.25- 4.50
24/16-oz. 6.25- 6.75
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Honey house ideas for the small beekeeper

by E. C. MARTIN, Michigan State College, East Lansing

Apiary and honey house of Roy W. Buffham, Racine, Wisconsin.

AMONG THOSE attending a county beekeepers' meeting in Hillsdale, Michigan, was a young beekeeper who interested me. He operated 20 colonies as a hobby and was not very experienced in production methods but he asked questions such as "what label should I use with this jar", and other questions indicating his desire to pack honey in such a way that it would have the greatest possible appeal to the consumer. I spent half an hour after the meeting talking with this man as I felt he was the type of hobbyist that is beneficial to the industry.

Packing to perfection can be as interesting to a hobbyist as managing bees. It can also make the enterprise more profitable to a sideline beekeeper. If a beekeeper with a few colonies is not interested in having the necessary equipment and taking the necessary time to put up a really attractive consumer pack, it is best for him to sell the crop in bulk containers to a commercial packer.

Emphasis, in helping the "small" beekeeper, has been placed on production methods and extracting. The result is that all too often the small beekeeper packs his crop in unattractive containers and the honey is neither liquid nor creamed and probably not properly free from wax and other particles. Honey packed for the consumer which is not clean, neat, and attractive is a detriment to the industry.

The Building

For a lifetime hobbyist or side-line beekeeper a special building or part of a building is well worth while for honey extracting and packing. If beekeeping means very much as a hobby the interest is increased greatly when you have a permanently located place to work that can be improved as time goes on.

Certain things are desirable in any honey house which are fairly obvious but may be worthy of brief mention. The area where uncapping, extracting, and packing is done should be well lighted. Because honey is sticky and invariably drips and spills when extracting, the floor should preferably be cement with a good drain. Smooth walls which are easily cleaned are desirable. A good source of plenty of steam solves many problems.

A beekeeper with two or three colonies may conveniently produce honey for home consumption in shallow frames using no wires and light foundation so that the honey may be eaten in the comb and no extracting room

will be necessary. Sometimes it is possible for several hobby beekeepers to set up one properly equipped extracting and packing room and do their extracting and packing together. It is rather surprising that there are not more groups who work together in this way. A group of about eight beekeepers in Manitoba own from 100 to 300 colonies each and they collectively operate one well equipped two-story honey house.

Equipment

All too often extracting equipment for the "small" beekeeper is pictured as being pails and wash boiler crowded into a corner and rather precariously balanced on little boxes. This applies particularly to the container for cappings which should be big enough that the cappings will fall into it conveniently and steady enough that you don't have to hold it with one hand.

Supply dealers sell metal tanks for holding cappings. However, you can make a capping drainer by tacking hardware cloth on the bottom of an open wooden box wide enough to suspend frames across it and as deep and long as you need to hold a good batch of cappings. This box is set on a sloping drain box lined with galvanize and equipped at the drain end with a honey gate. For the not-too-small beekeeper standard equipment such as the junior Brand melter or a whirl-dry uncapper is feasible.

Only a few years ago many beekeepers with several hundred colonies extracted honey by hand. Nowadays motor-driven extractors are the rule even for many sideline and hobby beekeepers. The job of extracting is speeded up and made much easier because the extracting goes on while you are uncapping.

Straining is a problem and many beekeepers tie cheesecloth over the top of the tank and of course have it become too heavy and fall into the tank once in a while. In order to avoid this trouble a rigid screen may be purchased or made over which three or four layers of cheesecloth may be draped. If the cheesecloth starts to plug, the top layer may be removed and the other layers may continue to work for a while longer. Dripping from a strainer on the surface of the tank creates undesirable bubbles in the honey.

I hope the day is not too far away when special strainers will be available, even for "small" beekeepers, from which the honey may pass through a pipe to the settling tank.

A "SMALL" BEEKEEPER planning to build a honey house or equip a room for extracting and packing should read the bee books and journal articles which deal with the matter and then visit as many other beekeepers as possible. In other words, get some sound ideas and plans before spending too much money. Also make the decision whether you want to pack a finished product or sell bulk honey.

It is possible for a "small" beekeeper to put up an excellent pack of either creamed or liquid honey but in order to do so he must learn all he can about the characteristics of honey and what a good honey pack looks like.

He must put up a pack that will not ferment. The honey must be clean and if it is to be sold as liquid honey it should be free from crystals. One of the chief requirements for packing honey is steam and a tank with some type of a heating jacket.

For creamed honey which is the best but least known and understood type of honey, it is also necessary to have a storage place where the temperature stays between 55° and 60°F. This may appear to involve more equipment than a "small" beekeeper can afford. However, some beekeepers with under 50 colonies have equipped themselves sufficiently to turn out an excellent product.

I believe that if a beekeeper does not become equipped to finish the packing job properly he should turn the honey over to a beekeeper who is so equipped or to a commercial packer.

●

MAY COVER PICTURE. This photo by Prof. R. L. Parker of Kansas State College shows honey bees actively working blossoms of tulip poplar. This tree is a very important nectar source in the Appalachian Mountains from Georgia to New York.

Honey bees and blueberry pollination

by F. H. LATHROP, Maine Agricultural Experiment Station, Orono, Maine

MAINE BLUEBERRY production is unique among agricultural industries.

The bushes grow in native abundance over some 22,000 acres of land, most of which is regularly burned. About two-thirds of the nation's lowbush blueberries come from this land.

Maine's blueberry production is important in the State's agriculture. In recent years the income from the crop has been about two million dollars. In 1951 it reached a peak of $3,522,000.

Production Varies

The total production varies greatly from year to year, depending upon diseases, insects, spring frosts, rainfall, and many other factors. Each year agricultural research and extension work shows how to gain more and more control over certain of these factors.

The result has been more efficient methods, increased yield, and improved quality of the blueberries.

Pollination

Blueberry blossoms are dependent upon insects for pollination. Many kinds of insects help to pollinate the blossoms. Among them are several species of bumblebees, a number of kinds of "solitary" wild bees, numerous flies and beetles and, of course, honey bees.

The number of bumblebees, "solitary" bees, and other insects observed on blueberry blossoms varies greatly from season to season. Such insects are subject to the influence of climatic conditions. Under favorable conditions, they are abundant, but when conditions become unfavorable they are scarce.

Many pollinating insects have been killed where dust was applied when the blueberry plants were in bloom, or when plants other than blueberries were in bloom on blueberry land. In applying dust for pest control, blueberry growers should be careful to avoid killing the pollinating insects.

Because there seems to be an increasing scarcity of native pollinating insects on some good blueberry land, many blueberry growers have become interested in using honey bees. Observations on land where hives of honey bees have been placed, show that in many areas there appeared to be a considerable increase in the yield of blueberries as a result of the activities of the honey bees. In some other places where honey bees were used, little increase in yield was apparent. The use of honey bees may be especially valuable when weather conditions are unfavorable for pollination.

Managing Colonies

The honey bees should be concentrated especially on areas where observations in past years have shown a scarcity of native bees. Bees can be of maximum benefit where there is an abundant bloom that has not been injured severely by frost or by pests.

The number of hives of bees that it is advisable to use on blueberry land varies greatly with conditions. If bees are used quite generally over a large area, the number of hives necessary in any place can be reduced. Where bees are placed on only a comparatively small piece of land surrounded by blueberry land on which no honey bees are placed, the number of hives per acre should be increased. As a working basis, it is generally considered that one strong colony of honey bees should be used per acre on small areas. Probably on large areas, one hive will cover more land.

For best results the honey bees should be placed on the land just as the blueberries have started to bloom. If practicable, the honey bees should be removed from the blueberry land promptly after bloom, before the blueberry land is dusted.

Research on honey bees and pollination is being continued at Blueberry Hill Farm, and reports will be made from time to time as additional information becomes available.

●

THIS MONTH'S COVER shows the blossoms of some Maine blueberries. Photo courtesy Univ. of Maine, Orono.

B & Z LIBRARY

The O. A. C. pressure strainer

by G. F. TOWNSEND and A. ADIE
Department of Apiculture, Ontario Agricultural College

STRAINING HAS been one of the greatest problems in the extracting and handling of honey. Many types of strainers have been developed, most of which depend upon a gravity flow and a large straining area. No strainer thus far developed will handle a large volume of honey without frequent cleaning and all will clog readily if any granules are present in the honey.

The strainer described herein may be used with modifications, for any straining condition. It should have a sufficient capacity, in many cases, to handle the whole crop without cleaning.

The principle involved is rather simple in that the granules, particles of wax, or other refuse are trapped and suspended in a layer of gravel or sand which is placed above a screen of suitable mesh for straining. This considerably delays the clogging of the screen.

Requirements

For satisfactory operation several requirements are necessary. Most of these may be met quite readily at little extra expense where steam is available.

The honey should flow from the extractor into a large sump tank which is provided with a series of screens to remove a large proportion of the foreign material. Three screens across a sump tank ranging from one-half inch, one-eighth inch, and one-sixteenth inch mesh are quite satisfactory. The honey is then pumped at a flow no greater than the extracting rate by the use of a variable speed motor and a positive delivery honey pump which has been geared down to the proper speed.

Before straining, the honey must be warmed to the appropriate temperature. This may be accomplished by jacketing part of the honey line and passing a flow of steam around this section of the pipe. The steam flow may be adjusted manually by a needle valve or controlled automatically by a thermostatically operated steam regulator of the proper specifications.

Construction of Strainer

The straining unit consists of a gasketed metal cylinder at the base of which the straining screen and supporting plate can be bolted into position. The top is also removable, which is an advantage in filling and in cleaning the unit.

The screen is supported by a 16-gauge plate with one-quarter inch perforations. Sand or gravel, as required, is placed in the cylinder above the screen. A suitable inlet, outlet, and a drain above the sand level are provided. There are several ways in which this strainer may be constructed. The diagram depicts one of the simplest forms. Details of construction are given.

Operation

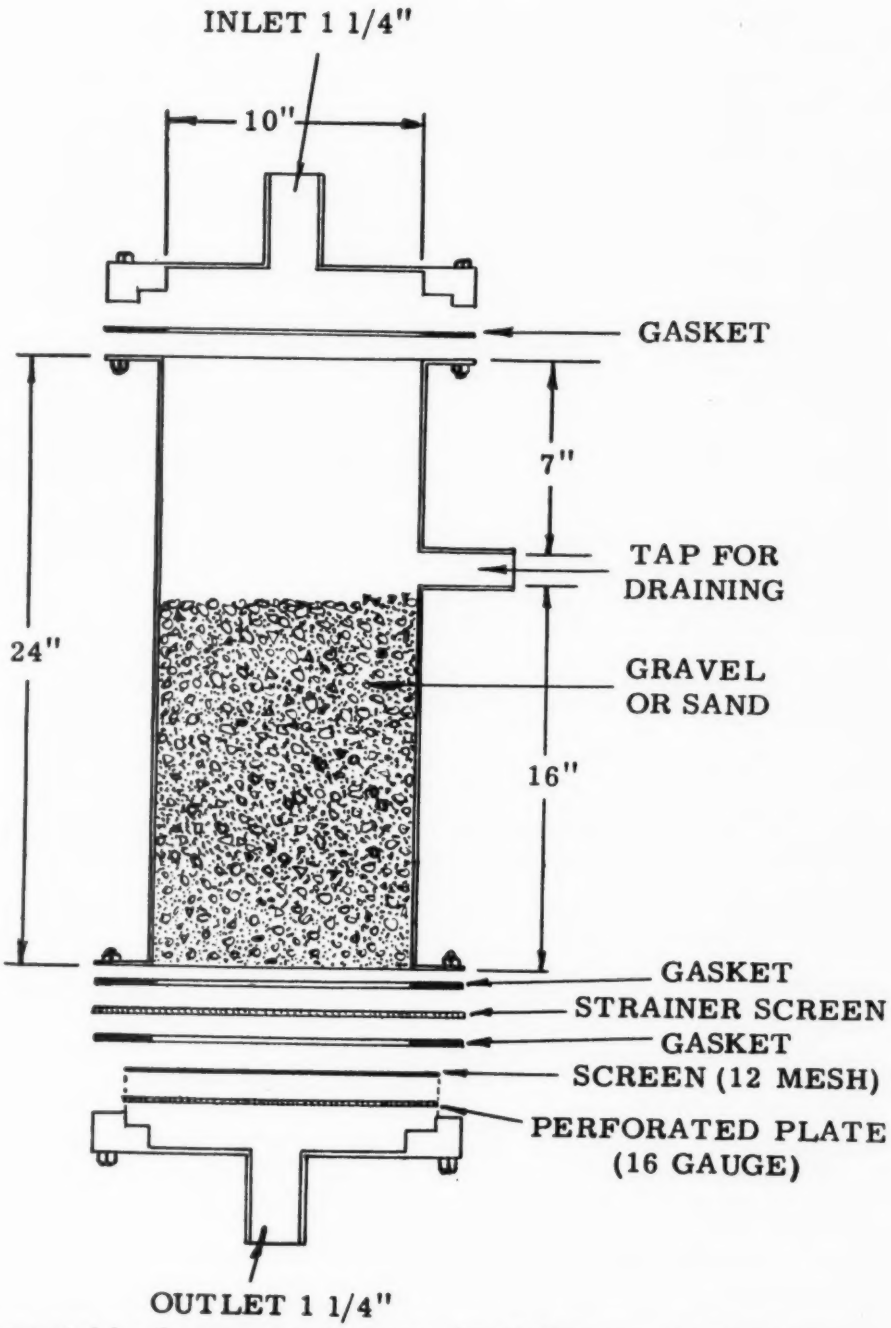
The temperature and type of gravel or sand used will vary slightly according to the operating conditions.

For normal extracting conditions where no granulation is present the temperature of the honey should be approximately 110°F. A 16-inch layer of pit run crushed gravel is used. This gravel is prepared by sifting it through a one-half inch mesh screen and a one-fourteenth inch mesh screen. Retain and use only that which will pass through the one-half inch mesh but not the one-fourtheenth inch mesh. The gravel is waterwashed and placed directly over a 105-mesh Dur-loy or Monel metal, free bolting cloth metal screen.

If granules are present in the honey being extracted the temperature should be increased to 120°F. This will melt the granules but will not soften the wax sufficiently to let it pass through the strainer.

THE SAME PRINCIPLE applies for the use of the strainer in packing plants as it does in the honey house. If the honey has not been strained or settled when it arrives at the packing plant then a preliminary straining as described above is advisable.

When the honey has had a prelimi-



nary straining the pressure strainer may then be used for the final straining between the pasteurizer and the coolers. In this case a four to six-inch layer of silica sand similar to that used for filtering water is placed over a 200-mesh stainless steel screen. The straining temperature should be between 165 to 175°F. If the temper-

(Continued on page 377)

Controlling robbing in honey bees

by R. L. PARKER,
Kansas Agricultural College, Manhattan

BEES ROB other colonies during times of little or no nectar flow. They seek honey especially from weak, queenless, or dead colonies. They gorge themselves with honey and carry it back to their hives. Exposed honey immediately attracts bees and starts them fighting.

Stuffing grass in the entrance reduces the entrance and keeps robbers out.

Weak or queenless colonies may be robbed of all honey, and the bees destroyed. Strong colonies may lose many workers by being killed by the robbers. Usually it is the strong colony which does most of the robbing.

American foulbrood is spread as a result of the robbing of weak or dead colonies infected with this disease.

Exposure of Honey

At times when robbing is prevalent, the manipulation of colonies is more hazardous, so more care should be exercised. If robbing is allowed to increase during the examination of colonies, the apiary soon may be in an uproar of angry, flying bees, and there will be much confusion and fighting at the entrance of other exposed openings to the hives.

As far as possible, examination of colonies when robbing conditions prevail should be done when the temperature is low enough to prevent free flight or late in the day when flight will soon cease. Do not expose a hive body, or brood chamber containing honey, or place a comb outside the hive body when there is no nectar flow.

Prevention Equipment

If examination of a colony is necessary, it is well to have an extra telescoping cover that has an inside half-inch rim into which a brood chamber or hive body can be set. The rim or cleats in the cover raise the hive body so that the bees will have free movement across the bottom bars and bees will not be killed when the hive body or brood chamber is set in the inverted cover.

The beekeeper should keep such covers on all colonies for immediate use at the time of colony examination. After the brood chamber has been set in the inverted cover, it should be covered with another inverted cover or other bee-tight board, such as an inner cover with the bee escape hole covered. If the weather is hot, provide shade for the brood chamber and bees in the inverted telescope cover.

The other part of the brood chamber being examined can be covered with an anti-robber cloth, which has an opening the length of the hive and about the width of two combs. Through this opening a comb and frame can be lifted. This opening holds its shape, since it is formed by a rectangular nine-gauge wire. On either side of the wire, cloth is fastened sufficiently long to cover the top of the hive if the opening happens to be on the opposite of the hive. The cloth is treated with 10 per cent carbolic acid solution as a repellent to the bees. The comb-opening is moved across the hive as each comb is examined.

Experienced beekeepers, during times when robbing is prevalent, do little colony examinations. They use protective covers but not anti-robber cloths. Most colony adjustments are

(Continued on page 375)

Advertise your honey for free

by CLARENCE TONTZ, Elsinore, Calif.

Approach signs advertising cold drinks and bargains are a great help to increase your volume of highway business.

DURING THE LUSH days before television, the movie industry, although making money hand over fist, depended upon getting fully half of its advertising free. The beekeeping industry, not nearly so prosperous, gets very little free advertising. It's mainly our own fault that we don't.

To sell your product you not only have to blow your own horn, but you have to get others to help you. And the nice part about it is that many other people and businesses are eager, anxious, yes, even desperate to give your horn a couple of good toots. Why? Mainly because what helps you helps them.

Radio Advertising

A few months ago a young man came into the honey packing room and asked if he could interview me on my beekeeping business for his radio program. "I suppose so," I replied. "When is it to be?"

"Right now." he said. It developed he had a very nice recording machine with him and we went into our highway store where I had installed a glass hive complete with a strong colony of bees therein.

The interviewer wanted to start off his program with loud buzzing of the bees. The hive had ventilating holes at each end covered with window screen and he held his sound pick-up instrument close to one of the holes while I tapped the hive sharply with a hive tool. The bees buzzed, but when he played it back the sound was too weak. So I lighted up the smoker and when he was ready I gave them a puff of smoke. They roared good and loud and the man was delighted.

Cooperating with this fellow resulted in a nice advertising plug both before and after the interview which, believe me, was quite painless after all.

The recording was made at ten o'clock in the morning and that night around eight o'clock I sat in an easy chair and listened to myself talk to thousands of (I hope) listeners.

After the interview that morning the young man thanked me warmly for my cooperation. He added that he had been having a bit of a hard time finding interesting subjects and people willing to spend a half hour discussing their business even though it meant much good free advertising. Many beekeepers could do the same thing to help move some of that surplus honey—especially in years of big crops.

June and mid-summer honey flows

by W. E. DUNHAM, Ohio Agricultural Experiment Station, Columbus

FOR SEVERAL YEARS in certain areas of Ohio the surplus white honey crop has been harvested from two distinct major honey flows. These have been designated by Ohio beekeepers as the June and the mid-summer flow.

Although there are some exceptions, in general the quality of the honey harvested from these two major honey flows may be summarized as follows: the June honey crop is whiter in color, milder in flavor, and usually has a slightly higher moisture content than the honey harvested during the mid-summer period.

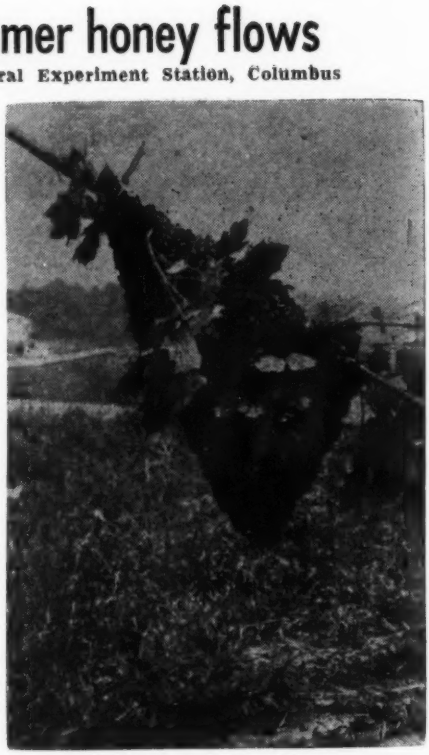
The Two Major Honey Flows

The June honey flow is intense and of short duration for several reasons. The extensive acreages devoted to cash grain crops have reduced legume acreages drastically. With the decreased acreage of legumes, the farmers' job of harvesting is greatly shortened and further expedited through the highly mechanized farm haying equipment. Further exaggerating this general situation is the farm practice of premature cutting of hay crops to insure higher protein content.

In Ohio, legumes furnishing the early honey flow are white Dutch, alsike, and yellow sweet clovers, and alfalfa. Late blooming white sweet clover is conspicuous by its absence in rotated pasturelands.

From the standpoint of low legume acreages beekeepers probably have already hurdled their biggest "hump". More interest is being shown in beef production and farmers are turning to grassland farming. In fact, this trend is already being reflected in better honey crops where this changing farm pattern is taking place.

The recent mid-summer honey flow has caused a great deal of speculative thinking among beekeepers. What is the explanation for this new picture in Ohio beekeeping? It is quite apparent that the last few summers have been drier and temperatures higher than usual. The general use of insecticides on legume insects undoubtedly contributes



Swarming can be a problem in June. —Photo by Clarence W. Carroll, Rochester, N. Y.

to more vigor in the second stands of the legumes. Premature early cuttings of legumes may also contribute to plant physiological vigor of the later stands. Improved and better adapted legume varieties are being more generally used by farmers and there is no doubt that these newer varieties furnish better bee forage than the old varieties which were less disease resistant.

Generally speaking, the mid-summer flow commences around July 22 and extends through August 15. Heavy rains about the middle of July followed with light rains or no rain, along with higher than normal temperatures, seem to provide the conditions favorable for a good mid-summer flow.

Beekeepers are not agreed on what floral sources are furnishing the surplus honey crop. It is the opinion of the author that all plants blooming during this period are contributing sources. The exact amount of honey

that each floral source supplies is more difficult to evaluate.

The following are a list of plants in bloom during this period: alfalfa, red and Ladino clovers, and soybeans. In some years Ladino clover bloom may be almost absent due to dry soil moisture preceding and during the mid-summer honey flow.

SOYBEAN HONEY is not a myth. Samples of this honey observed were white in color and very mild in flavor. They were of a slightly oily appearance and possessed much clarity. This honey was obtained from isolated test colonies located in an area where approximately 95 per cent of the forage was soybean.

Mr. John Knierim, an advanced graduate student working for his Doctor's degree at the Ohio State University, made a detailed examination of the honey and found that the pollen present in the honey was almost exclusively soybean pollen and, in addition, a very few grains of red clover pollen.

General Bee Management for Best Results

Efficient bee management during the June and mid-summer flows pays off in Ohio in terms of making a commercial beekeeping enterprise a profitable venture. Too much emphasis cannot be placed on having all colonies populous with adequate storage room on colonies at the beginning of the June flow. The June flow at best is of short duration.

The mid-summer flow may be of slightly longer duration and can be characterized as ranging from a slow to a medium rapid honey flow. Just as much emphasis must be placed on having strong populous colonies for advantageous storage as for the earlier honey flow. Remedial measures should be practiced during the latter part of June in colonies showing any tendency of slowed up brood rearing.

Queens should be replaced promptly in colonies showing failing queens. In colonies where honey is being crowded in the upper story of a two-story brood nest, the brood chambers should be reversed. **Even the feeding of a pollen substitute may be appropriate if yards of bees in certain areas are not maintaining a high level of brood rearing.**

For best results, super management is somewhat more tricky than in the June flow where the flow gets underway with much intensity. If the June flow has been only mediocre and there is 60 to 80 pounds of surplus distributed through two to three supers, it is better to leave the supers unmolested over the colonies for further storage during the late flow. In cases where the beekeeper has harvested the honey before the late flow, it is exceedingly important that he leave one partially filled super over each colony and, in addition, add another super on top position.

Often the mid-summer flow is so slow at the beginning that unless bees are already distributed in the supers, they will keep crowding honey in the brood nest at the expense of good storage in the supers; furthermore the storing morale of the colony will constantly deteriorate.

Due to this slower type of honey flow and possibly to the higher sugar content of the nectars, the behavior of the bees in storage and wax building is somewhat modified from that for the June flow. The bees seem to build the combs out uniformly but only at the rate which provides the immediate storage space necessary for the incoming nectar. Supers will be crowded so full that they often extract 60 or 65 pounds of honey per super.

Another interesting behavior pattern is that in combs damaged by wax moths and mice, the bees repair and replace the comb with a high per cent of worker cells. Swarming among colonies is not a problem providing the bees are well distributed throughout the supers.

Future Promises More Bee Forage

The rather immediate future for increased acreages of bee forage plants should be an encouraging aspect to beekeepers. The present status of government price supports correlated with reduced acreage allotments will, according to the latest information, throw approximately 30 million acres into other usages than they are now employed.

Equipment for processing honey

by E. BRAUN*, Ottawa, Canada

Part I

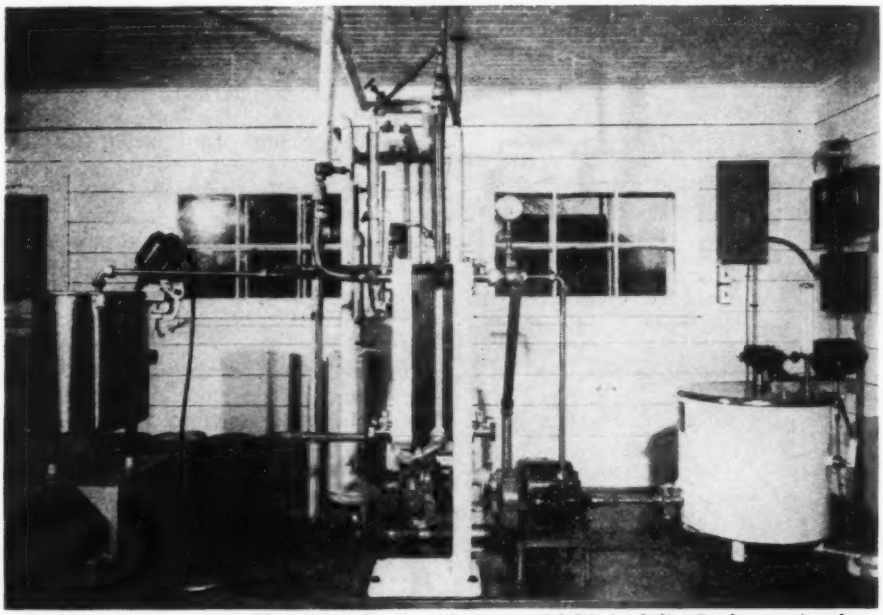


Plate-type heat exchanger. Right to left—Junior pasteurizer, wobble pump, heat exchanger, and seed mixing tank.

Introduction:

HONEY IS processed for two main reasons: (1) to control fermentation of the sugar-tolerant yeasts which are normally present in most honeys and (2) to destroy the crystal nuclei which are present and retain the honey in liquid form for an indefinite period of time or to permit introduction of crystal nuclei of a size to provide a desired crystalline structure of the honey in its recrystallized form.

The sensitivity of honey to heat treatment is due primarily to the high percentage of the simple sugars, levulose and dextrose, which are present in all honeys, in varying degrees, with the levulose usually predominant and secondly, to the aromatic nature which may cause a loss of flavor by driving off the essential oils.

The viscid nature of honey and its hydroscopic properties provide additional problems when processing techniques used in other food products are applied to honey.

*Senior Apiculturist, Apiculture Division, Central Experimental Farm, Ottawa, Ontario, Canada.

Historical Review

It was demonstrated in 1910 by Nussbaumer that heating honey to 158°F. (70°C.) for 30 minutes destroyed the yeasts and prevented fermentation. Lochhead and Heron (4) showed that little or no growth of yeasts occurred above 104°F. (40°C.) and Marvin (5) suggested that these yeasts were incapable of growth at temperatures below 52°F. W. A. Stephen (6, 7, 8) demonstrated that liquid air at 190°C. (310°F.) for two periods of 15 minutes had no effect upon the inoculum (Culture E6).

The application of radium for one hour on honey yeasts suspended in honey or agar showed no lethal effects. Exposure to x-rays of 1.04 Angstrom units did not kill the honey yeasts.

Hertzian waves (2.5 x 10″ Angstrom units) at a frequency of 12 megacycles per second; sound waves at a frequency of 427,000 cycles per

second and exposure to a special source of ultra violet had a certain amount of lethal effect upon honey yeasts. However, flash pasteurization of honey for commercial sterility was obtained at approximately 80°C. (176°F.) depending upon the time taken for the honey to reach this temperature.

Dyce (2, 3), studying the fermentation and crystallization of honey, demonstrated that honey could be heated to 200°F. and then cooled rapidly to room temperature without any detectable injury, but if it was heated to 160°F. and allowed to cool slowly the injury caused to color and flavor was readily detectable. A method whereby texture in recrystallized honey could be controlled was also demonstrated by him.

Dyce used a variety of equipment in his studies. He recommended the use of a double-jacketed tank, heated by live steam in the outer jacket, with a slowly revolving stirrer and scraper device to move the honey away from the inside walls without incorporating air, during the heating process. Cooling could be accomplished in the same unit by substituting cold or brine water and circulating it in the outer jacket instead of steam.

Dyce found crystallization to be retarded in heated honey roughly in proportion to the temperature and the time employed, and resulted in the formation of larger crystals. The addition of fine crystals to liquid honey and distribution by agitation caused the formation of fine crystals.

Heating the honey to 160°F. and cooling to 75°F. very rapidly, adding five per cent of finely grained crystals and storing at 57°F. for rapid crystal formation for two to four days, provided a product that could be stored at room temperatures without danger of fermentation or liquefaction.

This method, known as the "Dyce Process", was licensed in the U.S.A. and was generally adopted in the Canadian honey processing plants and form the basic concept of our present methods of honey processing equipment.

Experimental work on the equipment required for processing was largely left in the hands of co-operative or individual honey packers. Modified, new, or used dairy or food processing equipment was generally employed for this purpose.

The equipment more commonly used was designed on a batch basis and consists of a double-jacketed kettle for heating, a pump or air pressure for moving the honey to an O.A.C. type or in-line strainer, over a water or spray cooled roll, or into a coil dairy-type cooler, in which the seed was mixed, then into storage tanks connected with the filling machine. The volume of honey that could be handled daily was limited largely by the time element involved in cooling.

Hughes Brothers, Easton's Corners, Ontario, developed a tubular unit of three-quarter inch pipe, in series, which was jacketed and heated by hot water. A second similar unit was used for cooling the honey with well water. The honey was pumped through the pipes, heated to 170°F. and cooled to around 100°F., depending upon the volume of honey pumped and the temperature of the well water used for cooling.

Mr. C. A. Biggs and his son developed and patented another machine in 1941 on a continuous-flow basis. The principal of this machine was an annular type of flow.

The hot water was circulated through a center pipe, flowed over and down an outer pipe; the honey was pumped upward in a second pipe sleeved over the center pipe, and flowed down through another sleeved pipe, which was surrounded by a fourth pipe through which the hot water was circulated.

The heated honey helped to warm the cold honey entering the system and pressure was reduced to a minimum. A similar unit was used for cooling the honey. The flash pasteurization temperature of the honey was 175°F. or over and the cooling temperature was limited to 90°F. because a film of cold honey formed inside of the pipes next to the cooling medium.

Both of the afore-mentioned units were limited in their capacity for volume and did not cool the honey to the desired seeding temperature of 80°F. or below. However they were, to my

(Continued on page 381)

Diseases and enemies of bees and beekeeping equipment

by JOSEPH O. MOFFETT, Colorado Agricultural Experiment Station

Part II

Other Brood Diseases and Disorders

FUNGI SOMETIMES attack the larvae and pupae of bees, however, they rarely if ever cause serious economic loss. Brood becomes hard when killed by fungus and is called "stone brood." Sometimes brood becomes chilled and dies. When this occurs, the dead brood is uniform and not spotted throughout the comb.

Larvae also die from poison in the pollen. Move bees to another source of pollen if they are collecting pollen which is causing heavy losses of brood. If the pollen has been stored in the hive, remove and destroy the combs containing the poisonous pollen.

Diseases of Adult Bees

Adult bees are afflicted with a great variety of diseases, such as Nosema, Acarine, Amoeba, Fungus, Paralysis, and Septicema. Only Nosema is discussed here.

Nosema

Nosema disease is caused by a protozoa **Nosema apis.** It is parasitic in the stomach of the bees. Very resistant spores are formed. The disease is spread in water and food. This disease causes a gradual weakening of the colony. It is also a primary cause of supersedure of queens in newly formed colonies established from packages.

The disease is worse when bees are confined to the hive for long periods without flight. Affected bees can fly only short distances. Bees will be seen crawling in front of the hive. The abdomen is often shiny and greasy in appearance. The bees may drag their legs in crawling. The rear wings may be unhooked from the front wings and held at abnormal angles.

Treatment

Small stagnant pools of water help spread the disease. Provide bees with running water if they do not have access to an irrigation ditch or river.

Fumagillin, sold under the trade name of Fumidil B, now offers a method of controlling Nosema. Beekeepers seeking more details should consult the February 1954 issue of Gleanings for an article by Dr. C. L. Farrar called "Fumagillin for Nosema Control in Package Bees".

It is suggested that a 9½ gram bottle of fumagillin (Fumidil B) be mixed with 50 gallons of 2:1 sugar syrup for spring feeding. Over-wintered colonies should be fed one or two ten-pound pails of medicated syrup, depending on the amount of infection, climate, and source of food. Newly-introduced packages should receive a ten-pound pail of medicated syrup to insure against the spread of any traces of Nosema.

Moths

There are several species of moths that cause damage to stored combs. The greater wax moth, **Galleria mellonella** (L.), is a serious pest of stored combs and weak colonies in warmer regions of the United States. It is found in the lower elevations in Colorado. A few days of freezing temperatures will kill all stages of this moth. The larvae of this moth burrow into the combs upon hatching from the egg. They eat out the middle portion of the comb. Combs are often completely destroyed by the larvae.

The larvae leave silken tunnels and frass behind as they burrow through the comb. These tunnels are easily seen when the combs are examined. The larvae are grayish-white. They are approximately an inch in length before pupation. Heavy white cocoons are spun at the end of the frames, and the larvae pupate in these cocoons. The adults are 3/4 to 5/6 inch in length and have a wing expanse of 1¼ inches.

The Indian meal moth, **Plodia interpunctalla (Hbn.),** is frequently found in stored combs. They are general scavengers and will also feed on stored grains, dried fruits, and dead insects. The larvae will develop on stored

A bad infestation of wax moth.—Photo by Martin N. Ralph, Vermont.

pollen, clusters of dead bees, and brood combs. They do not completely destroy the comb, but leave frass and webbing in the cells. Full-grown larvae are about one half inch in length. They range from white to pink in color, although a pale creamy color is most common.

Control

THE GREATER wax moth will attack combs in weak colonies in the field and gradually destroy them. Strong colonies are the best control against the wax moth in the field. A strong colony will also carry out and destroy the moths.

Stored combs are very susceptible to moth injury and should be stored in an unheated building. Fumigate these combs once a month in the summer. A good fumigation in the fall should protect the combs in an unheated building until spring. Hydrocyanic acid gas and methyl bromide are commonly used for this purpose. **Both of these chemicals are extremely deadly to people and animals. The fumes must not be inhaled.**

The building must be aired out thoroughly before entering after fumigating. Hydrocyanic acid gas will not kill the eggs of the moths, and a second fumigation is required. This chemical may be purchased in the form of calcium cyanide.

Stack the supers five or six high and place a tablespoon of calcium cyanide on the bottom board. This can be done outside with little danger to humans. Make supers tight with gummed paper or a similar substance, and have a tightly fitting cover. Because cyanide gas is lighter than air the powder must be placed at the bottom of the stack for satisfactory results.

Methyl bromide kills all stages of the moth, including the eggs, but its rate of killing is extremely slow.

Great care must be taken when handling cyanide or methyl bromide. The fumes of calcium cyanide will kill a person in less than a minute, while the effect of methyl bromide is often not noticed until later.

Mice

Mice are often destructive to combs. They will eat large sections out of the combs and will also enter overwintering colonies and make their nest. They eat the comb below the cluster of bees.

Mice may be kept out of stored

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The water supply for honey plants is being reduced

by **BRISTOW ADAMS**, Ithaca, New York

[The facts and figures in this article are derived from material furnished by Raphael Zon, director of the Lake States Forest Experimental Station of the United States Forest Service. Also, it is indirectly derived from studies by the late W J McGee*, who was head of the United States Inland Waterways Commission during the administration of President Theodore Roosevelt.]

This gully of farm land, an example of extreme erosion, is in a cornfield in Fayette County, western Tennessee.—Photo from U.S. Department of Agriculture.

THE WATER SUPPLY of the United States is being reduced, despite our enormous coast line, our innumerable lakes and rivers, our 75 million acres of swamp and overflow lands, the Mississippi's inundations, and the annual precipitation of 30 inches over the entire country, with about 44 inches over New England.

The first settlers across the Appalachians usually made their homes near springs. Within a decade or a score of years the springs failed and shallow wells were dug; when dug wells failed they were deepened or replaced by drilled wells. These are matters of record of continuous residence on the same homesteads for 50 or 86 years. Observations compiled by the United States Department of Agriculture confirm this common knowledge.

The water capital of the country consists of two parts, currency and reserve; rains, snow, and dew are the currency; the ground water within the reach of growing plants is the reserve. In restricted areas the rainfall during the growing season is enough for the production of staple crops.

The water supply from precipitation on nearly two billion acres of the country is only half of that required for full productivity, and since the rainfall is unequally distributed, considerably less than one billion acres have enough for even fair productivity, and nearly a billion acres more receive too little water to make farming feasible. The remaining portion is too mountainous for cultivation. The water, therefore, accumulated in the ground within the reach of growing plants, or the "reserve," bears a most important relation to the water supply. This underground water renders farming feasible and sustains production and population in the greater part of the settled country, because it supplements the water that falls. The reserve water capital has been estimated to be equal to 25 feet in depth, which represents an accumulated rainfall of 10

*McGee insisted that his given names consisted only of initials; hence they were not abbreviations,—therefore, no periods.

years, stored from rains and snows during the non-growing season and during preceding years as well. With deficient "currency," and the stored "reserve" dwindling, we approach a shortage of water.

Recently the Department of Agriculture undertook to ascertain the changes in the water level that follow settlement and cultivation. The changes are best shown by variation in depth of standing water in wells. Some 11,000 wells were studied in 10 states: Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Ohio, Tennessee, and Wisconsin. The records show that in more than 45 per cent of all the wells examined the water level had dropped. The mean rate of lowering, by decades, is equivalent to 1.73 feet or nearly 14 feet for the 80 years since settlement. These conclusions probably apply to New England, including New York, though possibly in less pronounced form.

THE CAUSES of the reduction in the underground water supply, upon which farming depends, must be sought in a number of influences. For every pound of grain grown, for every pound of meat produced, many times their weight in water is required. Thus a pound of bread is equivalent to two tons of water used by the growing grain; a pound of beef is the equivalent of from 15 to 30 tons of water consumed by the animal both directly or indirectly through feed. The adult who eats 200 pounds each of bread and meat in the course of a year uses something like a ton of water in liquids, and the equivalent of 400 tons in bread and 4,000 tons in meat, besides the use in washing of from 100 pounds to 200 tons, according to personal habits. At this rate, if there were no other source of loss, the available water supply would be enough for about a billion people. At the current rate of increase in population, this number would be

A gullied slope has been reclaimed. Here erosion has been controlled by a planting of black locust, a good honey plant, which has set up forest conditions. The trees shown are seven years old.—Photo from U.S. Department of Agriculture.

reached in some three centuries; which is a future span equal to that passed since the Pilgrims landed at Plymouth Rock.

The other cause of depletion of underground waters, beyond the 30 per cent used for the production of crops and the use of men and animals, must be sought elsewhere. The dominant cause is the loss of rain and snow water through surface run-off unretarded by adequate ground cover especially during the non-growing seasons. W J McGee, an authority on the duty of water, describes these phases as run-off, cut-off, and fly-off, to indicate respectively, the water that runs away, that which is used, and that which evaporates.

The run-off, not retarded by plants, has little opportunity for penetrating the ground and hastens into rivulets, streams, and rivers to the sea, without performing a useful duty in producing crops and sustaining life on the earth. To clear large areas of land of its forest cover, the burning of the leaf-litter in most of the forests of the country, careless and improper methods of cultivation result in destructive erosion and the draining of underground waters through deep gullies. Thus the waters from rain and melting snows get away without percolating into the ground and do not replenish the reserves that are used up in the growing season.

Is this gradual depletion of ground waters an unavoidable process which inevitably follows settlement, or can it be prevented or controlled? The danger lies in the injudicious use of land and its vegetative cover. This danger is preventable, once it is fully understood and acted upon.

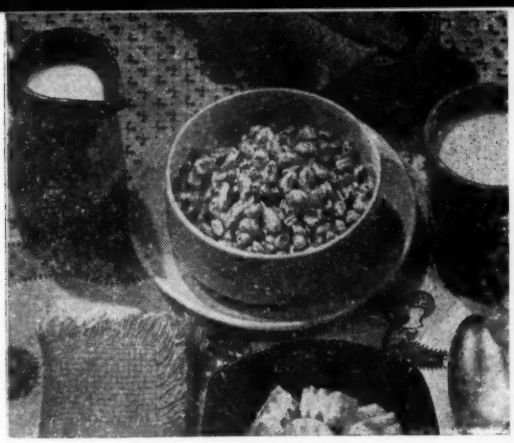
Proper methods of cultivation, the terracing of hill sides, maintenance of a forest cover, methods of flood control by reservoirs, all have a beneficial effect. The federal government, through many agencies, works in this direction. The need is a unified, coordinated activity, if floods are to be controlled, erosion avoided or averted, and the ground-water supply preserved.

Danish Apiary

Demonstration apiary of the Copenhagen, Denmark Beekeepers' Association. The 15th International Beekeeping Congress will be held in this city August 31 through September 4. Further details can be obtained from Mrs. W. A. Stephen, Box 92, Cary. North Carolina (home address). Photo sent by O. E. Christiansen.

Honey the year 'round

by Mrs. BENJ. NIELSEN
Aurora, Nebr.



Try honey-sweetened milk on this yummy honey toasted cereal.—Photo courtesy Kellogg Company.

ALONG ABOUT this time of the year many homemakers "shelve" honey until cooler days, when snappy temperatures again bring forth the demand for hot biscuits and honey. By many consumers honey is definitely regarded as a seasonal food and no other use, except on hot biscuits, ever comes to mind. These folks are very definitely missing unlimited flavor treats and the finest of all sources for quick energy pickup.

During the winter months the Nielsens enjoy honey drizzled over hot cereals—and blending on hot cereals is no problem. However, using it on the ready-to-eat cereals, most popular during warmer months, does present a problem in even distribution. The Kellogg Company which has so long been one of honey's staunchest promoters has just tried an idea in their Test Kitchen and found it excellent. Kelloggs had always thought that honey was a good sweetening for ready-to-eat cereal, but had not found a really practical way of serving it. They mix one to two teaspoons of honey with one-half cup milk, the amount recommended for a one-ounce serving of ready-to-eat cereal and pour it over the cereal. Unusually good! The honey gives a richness to skim milk which dieters might appreciate. One of the most popular of the ready-to-eat cereals has a sweet coating, part honey, toasted right into the cereal and on this a less sweet honeyed milk is better.

Nice boosts for honey, Yes?

Honey-sweetened fresh fruits, all of them, have no peer. Let honey continue to sweeten coffee and tea, iced or hot. Use it as a topping for ice creams and as sweetening and flavoring in frozen desserts of all kinds.

What a mistaken idea to think honey is a seasonal food and must be stored away for the summer!

Honey Rhubarb Fluff

One pound fresh rhubarb, ½ cup honey, 1 tablespoon unflavored gelatin, 1 tablespoon cold water, few grains salt, 1 cup whipping cream, whipped.

Wash rhubarb and cut in small pieces. Add honey and simmer until rhubarb falls apart. Remove from heat. Soften gelatin in cold water and add to hot rhubarb. Stir until gelatin is dissolved. Chill until thickened, then fold in whipped cream. Turn into a mold rinsed in cold water. When ready to serve, unmold on serving plate and garnish with whole fresh or frozen strawberries. Serves six.

Frozen Honey Strawberry Shortcake

One and one-half cups crushed strawberries, ½ cup honey, 1 tablespoon lemon juice, 3 cups graham cracker crumbs, ½ cup cream, and 1½ teaspoons vanilla.

Combine ingredients in order listed and blend well. Line a freezing tray with oiled paper, fill with the mixture and freeze until firm. Cut into squares, top with honey sweetened whipped cream and a few pecan meats if desired. Serves six.

Honey Nut Custard Ice Cream

One and ⅔ cups evaporated milk, ⅛ teaspoon salt, 4 egg yolks, well beaten, 2 cups boiling water, ⅔ to 1 cup honey, and ½ cup chopped nutmeats.

Pour milk into freezing tray of refrigerator and freeze until ice crystals form around edges of tray. Add salt to beaten egg yolks and add boiling water slowly, stirring constantly. Cook over hot water two minutes. Cool and add honey. Whipped chilled milk until stiff. Fold into cold custard, add nuts and freeze until firm. Serves eight. Use honey as topping if desired.

FROM Foreign LANDS

Nosema Control

DURING THE flying season it is virtually impossible to transmit Nosema disease from infected bees to healthy bees. So reports L. Bailey of the Bee Department at Rothamsted Experimental Station in Harpenden, England.

The comb is the main reservoir of infection during this period, the specialist revealed. Combs are rarely completely cleaned by the bees during the summer and the few bees which become infected in the autumn spread the disease by defacation during the winter.

"Complete transference of bees to clean foundation early in the year has eliminated the disease by the end of the season with no subsequent relapse. Transporting colonies over long distances causes excitement and defacation within the hive, which ruins the beneficial effect of transference to clean foundation unless sufficient time has elapsed for all infected bees to have died."

Formaldehyde or glacial acetic acid vapors will effectively sterilize old combs.

Cotton waste soaked in these substances should be placed in empty boxes between hive bodies of old combs. The stack of supers should be sealed air tight and left for a week. The combs are then sterile and are suitable for use a few days after airing.

Fumagillin is a good remedy but its effectiveness can be increased with fall feeding when combs are in their cleanest condition. The small number of diseased bees in the cluster are cured and do not transmit their disease by winter defacation. Spring examinations have shown mild relapses after such treatment but these have probably been due to traces of spore-contaminated material persisting on the combs from the previous year.

Treatment with fumagillin during the summer is of little value since the reservoir of disease on the combs remains until late in the year to reinfect the winter cluster and create a new outbreak of the disease.

British Bee Journal, April 8, 1954.

International Congress Issue

CONGRATULATIONS ARE in order for the editorial staff of the BRITISH BEE JOURNAL for their outstanding preparation of their 15th International Congress issue. His Royal Highness, Prince Axel of Denmark, is featured on the cover of this special printing.

Mr. Cecil C. Tonsley, Editor, has presented a very enlightening advance coverage of this important event. Besides the complete program, a biography of the President of the Congress, and interesting articles on Denmark and Danish beekeeping are also given.

British Bee Journal, April 8, 1954.

The New Miracle Medicine

COOPERATION of some beekeepers, chemists, doctors, and biologists working with royal jelly resulted in amazing discoveries. Insects, mice, guinea pigs, and other animals given royal jelly outlived their mates by a third. Chickens started laying double the number of eggs and old chickens started laying again after being fed quantities of Royal Jelly.

French beekeeper, M. Caillas, reports that he felt much better, noticed an increase in appetite as well as mental powers after drinking the medicine. It is his belief that royal jelly is very beneficial to the body if not more than 1.5 milligram is taken per day.

A French doctor made the discovery that women were able to bear children after menopause once royal jelly was included in their diet.

Another beekeeper reports that his hemorrhoids which had bothered him for 30 years and which were about to

(Continued on page 378)

Live and Learn

By Propolis Pete

THIS IS THE time of year when beekeepers either are worrying about what they are going to do with all that equipment that they have ready, or whether they will have enough to hold the crop. Some are spending the money that they think they are going to make, and others are gloating over the prospects, but keeping their fingers crossed.

As for me, I am not worrying, and I am not gloating. I am wondering. The way things are going this spring, anything can happen. The honey plants seem to be in splendid shape, and as usual the bees are in such a state that your guess is as good as mine as to what is going to happen.

When I unpacked towards the end of April, I found the usual assortment. Some were strong, and some a bit on the weak side. No winter loss, and even the weak ones were not so bad that they needed any particular attention other than to be watched carefully. Again I had some rousing power-house colonies that didn't have a drop of honey stores. I had some heavy with stores, but with minimum clusters, and also there were some that were nicely balanced. Three were so powerful that I put on another deep body at once in between the two brood chambers. Thought that if I cooled them down a bit I'd gain in the end.

I noticed something this year that I had never noticed before. It might have existed right along and I just did not notice it, but several colonies had widely scattered brood. This is an almost sure sign of a queen that should be given the old heave ho. But there also were patches of brood that were as solid as could be wanted. It was the sealed brood that was scattered, the eggs and young larvae were neatly packed in to the capacity of the comb. It could be that when the queen was laying earlier in the season she found some of the cells with pollen or stores, or even a sleeping bee in them, so passed them by. When she got out of the area of the winter cluster she found loads of empty cells, so she went to town. Or maybe her machinery got gummed up, and when she got the jam cleared away she went to work. Anyway, it will be interesting to see what happens.

I HAVE NOTICED before that there will be combs with every cell containing an egg, but the growing larvae and sealed brood will be scattered. I have put these down in the past to a case of the queen shooting blanks.

Another oddity in my spring examination was the fact that on two of the colonies the queen was on the inner cover when I took it off. I always look before laying it down, and this time it saved me a lot of work. In two more colonies she was sitting on top of the frames, thumbing her nose at me when I opened the hive. Also, in one colony, I found ten of the worst combs that you have ever seen. Now I know where those combs went that I had laid aside to be melted down. There were all kinds of brood in these combs, so I put this body over an excluder to give the worker brood a chance to hatch out. I had a time finding that queen. I went through that body three times and was giving up when I found her on the first comb that I had taken out of the hive to make room for the further examination.

Those power-house colonies that I told you about up front are going to be a problem in swarming time. One of the reasons that I am not in favor of two-queen colonies is the heavy lifting for an old geezer like me, and I'll be in trouble if these colonies get six or seven high before the season is over. Two-queen colonies couldn't be any stronger than these are right now. But nature will take care of my troubles, I am pretty sure. One thing, I'll just add the supers and trust to luck. I have an idea that looks promising. If it works I'll tell you about it after the crop is in.

●

"There is no royal road to success in beekeeping. Eternal vigilance is what it takes. One reason more beekeepers do not succeed is that they are not willing to pay the price."—Anonymous.

Control of ants in apiaries

by KIRBY L. COCKERHAM, Entomologist, Louisiana Agricultural Extension Service and EVERETT OERTEL, Apiculturist, U. S. Department of Agriculture, Bureau of Entomology and Plant Quarantine, Baton Rouge, Louisiana.

ANTS ARE destructive pests in the home, on the farm, and in industry in Louisiana. They destroy and contaminate food, pester livestock, become a nuisance by their presence, and actually cause injury.

Beekeepers, especially those living in the South, often go to considerable expense of time and money to keep ants out of honey houses and their colonies of bees.

Kinds of Ants in Apiaries

There are several species of ants found in or near bee yards in Louisiana. The most damaging one is the **Argentine ant.** This species is prevalent over much of the State but is most abundant in the southern part. Colonies of bees are frequently killed within a few days, if attacked by a large colony of Argentine ants. Larvae, pupae, adult bees, and the honey in the combs are eaten. The bees are not able to keep these ants out of the hive, if the colony is attacked.

The **common Fire ant** and the **Imported Fire ant** may be present near apiaries, but they do not cause the damage that the Argentine ant causes. Two other species, **Little black ants** and **Carpenter ants,** sometimes nest in hives. However, they cause little or no damage but may annoy the beekeeper when he manipulates the colony.

Control Measures

Clean-up: A clean apiary is less likely to harbor ants than a poorly kept one. Remove all rotten wood, stumps, boards, trash, piles of leaves, grass, or brush from the apiary and the nearby area. Argentine ants like to nest in or under such material. Underbrush, weeds, and grass should be kept cut close to ground so that any insecticide used will reach the soil.

If Argentine ants are nesting in part of the hive or in a hive stand, the infested material should be removed and burned. Honey and pieces of bee comb should not be left lying on the ground in the apiary nor on the honey house floor, since ants are attracted to material of this kind.

Chlordane: Chlordane, in either dust or spray, is an effective ant killer. It should be applied at the rate of at least two pounds of technical chlordane per acre. Twenty pounds of ten per cent chlordane dust or 40 pounds of five per cent dust per acre is the equivalent of two pounds of technical chlordane per acre. One half pound of 10 per cent chlordane dust or one pound of five per cent dust per 1000 square feet is the equivalent of two pounds of technical chlordane per acre.

Chlordane spray should be mixed at the rate of two tablespoonsful of 45 per cent emulsifiable concentrate to one gallon of water or three quarts of 45 per cent emulsifiable concentrate to 100 gallons of water. One ounce of 50 per cent chlordane wettable powder per gallon of water, or six pounds per 100 gallons of water also are satisfactory spray mixtures.

Spray or dust thoroughly and carefully the ground of the apiary, the trunks of nearby trees, fence posts, hive stands, and underneath the hives. Treat heavily all ant nests in or near the apiary to lessen the danger of reinfestation. Remember that it is the chlordane, not the water nor the diluent of the dust, that will kill the ants; so do a thorough job.

Apiaries should be visited at regular intervals, particularly in the fall when the ants begin to congregate for the winter. Whenever Argentine ants are seen in the apiary or about the honey house another application of chlordane should be made. Three or four applications per year should keep ants out of most apiaries.

Tanglefoot Bands: Where bee hives are placed on stands or benches, ants may be kept away from the colonies by applying bands of tanglefoot to the legs of the stand. The tanglefoot may be smeared on with a stiff brush or paddle, making a two or three-inch band around each support. Such a

band has to be renewed frequently, for it becomes hard and dusty, and then the ants can cross it. Chlordane spray or dust is much more satisfactory than tanglefoot.

Poison Bait: Many people are familiar with the use of government formula ant poison to control Argentine ants. Although this poison may be effective in houses and in cities, beekeepers have found that it is of no value in the bee yard. It is not recommended by us for use around the honey house or the apiary.

Government formula ant poison should be kept in a properly labeled container, away from children, bees, or livestock.

Effect of Chlordane on Honey Bees and Ants

Chlordane, if properly used in the apiary, will not kill colonies of honey bees. It has been used in apiaries without any damage to bees. Chlordane dust should be used only when the air is calm so as to prevent drift into the hive entrances.

Chlordane has a residual effect. It kills ants that come in contact with it several weeks after the poison was applied. The length of time that an application can be depended on to keep ants out of the beehive depends upon temperature, rainfall and other weather conditions which affect the residual killing effects of chlordane.

Precautions

Chlordane is a poison and it should be handled with care. Wash thoroughly with soap and warm water, if chlordane is spilled on the skin. Keep containers labeled, tightly closed, and away from children. Keep livestock off treated areas.

International Beekeeping Congress and Tour

THE OFFICIAL program for the International Beekeeping Congress has been issued and, although it is impossible to give a detailed outline of it here, we can give some of the chief details. There will be twenty-three papers given in English, which should provide a great deal of "food for thought" and interest. One day will be devoted to a tour of North Zeeland, including a visit to the Bee Research Station, as well as other places of interest to the Congress members. There will be an official reception on August 30th at 7.00 p.m. and a banquet one other night. We are told that the Danes are wonderful hosts, so we are certain that every moment has been well planned and will be most enjoyable.*

Some of the most memorable things about any trip are often the little things which come "between the lines". We feel that there will be a great many of those little "extras" to add pleasure and joy to your tour. You will be able to visit some lovely places rarely seen on an ordinary tour—some of the old towns of England which are of particular interest to Americans—you will see the magnificent spires of Salisbury Cathedral—the lush countryside of Devon. The group is invited to tea at the Taylor Bee Supply Company in Welwyn, following the visit to the Rothamsted Experiment Station. The pause for tea is one of the delightful experiences of a trip to Britain and their tea has been called "a heavenly brew".

In Norway, tea on the terrace at Sundoya with the majestic scenery to enthrall you, will be another never-to-be-forgotten time. And so we may go on, to include the charm of the medieval towns of Celle and Ghent and Luxembourg. Celle has the added attraction of the Bee Research Institute. Switzerland, with its perfection, must be seen to be believed. (Perhaps we can find a little restaurant serving some of their superb Swiss cheese dishes!) France will be full of interest for it, too, has so much of the past rubbing elbows with the present. Storybook places will come to life there, as they will in Amsterdam also.

All these things add up to the trip of a lifetime and we are working hard to make the tour most enjoyable and worthwhile. Further details may be obtained from Mrs. W. A. Stephen, c/o Patterson Travel Service, 208 West Morgan Street, Raleigh, N. C.

*Registration for the Congress will be August 30th, with the official reception that night, as noted. The Program will begin on August 31 and continue through September 4.

Bee Facts

(A Digest of Scientific Research)

Preserving Hive Covers

DISCARDED CRANKCASE oil is used to preserve wood covers in Idaho, according to Ken Bradshaw, Wendell, Idaho.

"The covers are placed in oil, weighted down, and boiled for 20 to 25 minutes. This enables the oil to penetrate the wood thoroughly. The oil should be strained through a sawdust-filled hive body to remove the dirt before being put into the boiling vat."

Reference: Bradshaw, Ken. Boil Covers in Used Crankcase Oil to Preserve Them. Colorado Bee Notes. Vol. 4, No. 12. Pg. 2. April 1954.

Vetch Pollination

THE SEED yield of hairy vetch can be increased over 20 times when adequate numbers of honey bees are made available for pollination. So reports Nevin Weaver, entomologist at the Texas Agricultural Experiment Station.

"Honey bees work vetch very slowly, and a large number of bees are necessary to saturate a field. However, until other factors affecting vetch seed yield are more fully understood and controlled, complete saturation of a field does not appear to be economical."

Reference: Weaver, Nevin. Pollination of Harry Vetch by Honeybees. Prog. Rpt. 1649. Texas Agric. Exp. Sta. Feb. 1954.

Honey Marketing Survey

CONSUMER ACCEPTANCE of dark honey can be increased through labeling by color, reports H. M. Ellsworth, Marketing Economist of the California Department of Agriculture. Although such labeling would encourage the distribution of light honey, the sale of dark honey would also be stimulated.

This and other information was brought to light through a survey conducted for the California honey industry by the Bureau of Markets, California State Dept. of Agriculture.

The survey pointed out that in a considerable number of stores filtered honey had granulated. This indicated that filtration alone is not sufficient and that attention to retail stocks is required to keep granulated honey off shelves.

Competition within the honey industry is such that individual packers and distributors are not likely to expand their promotional work, and an increase can best be accomplished on an industry-wide basis. Such cooperation is necessary, for honey is considerably more expensive than many large-selling sweets. California honey is priced 42 per cent higher than a number of jams and jellies, and 45 per cent higher than dark corn syrup.

Reference: Ellsworth, H. M. Expanding the Consumption of California Honey. Unnumbered Bulletin. Calif. Dept. Agric. 36 pgs. 1953.

Treatment for Hypersensitivity

A FRENCH physician was suddenly called one night to see a woman aged 71 years. Fifteen minutes previously a bee had stung her on the neck, just below the jaw.

The patient was unconscious, the face, neck, and lips were swollen. The lips were violet, reflexes were weak or absent, the pulse rapid, pulmonary rales were present (a sort of whistling resulting from an obstructed air channel), and the blood pressure low.

The physician administered an antihistaminic, lobeline, and an antispasmodic. The antispasmodic was administered to combat the glottic and bronchial spasms, and lobeline, to stimulate respiration.

The patient recovered consciousness within three-fourths of an hour and the symptoms such as salivation gradually disappeared. A week later the patient was entirely recovered.

Reference: Guerin, M. A. Coma Par Piqure D'Abeille. J. de med. de Bordeaux 129:1079. Nov. 1952.

American Honey Institute News Notes

by HARRIETT M. GRACE, Director

"HOW FAR can I make that shrinking dollar stre-e-e-tch?" That is the question in the back of every purchase that the lady of the house makes. Seems that the dollar bill is never quite big enough to cover all the grasping little demands that are made upon it.

We can't work wonders with the dollar bill any better than anyone else. But we do know of one excellent way to keep costs down. OUR WAY IS THE HONEY WAY.

Honey is worth its weight in gold. It even resembles it somewhat. A honey user wise in the ways of the kitchen can use honey cleverly to the healthful benefit of her family and to the fiscal benefit of her own pocketbook.

Honey bought in quantity by the five-pound container will be cheaper and more economical to use. Keep a dripless pitcher handy and refill it from the larger container. Then proceed to use honey wherever you would use a sweetening agent of any kind.

To replace sugar with honey when you are baking, simply bear in mind that you must decrease the amount of liquid you add by one-fourth cup for each cup of honey you add.

Every beekeeper's wife knows these simple facts, but often overlooks them in the management of her own house. It's a simple case of standing too near the trees to see the forest; of being too absorbed in honey affairs to remember how honey can work for you as well as for anyone else.

But economy with honey is seldom stressed by beekeepers when they promote their honey. And it should be. Make a point of honey's many uses, its good keeping qualities, its ability to combine with other foods, all for a very average price.

Be sure to point out to the homemaker that when she buys honey she buys a **quality** food at a nominal price. Honey is high quality for it is pure, clean, unprocessed, nutritious, and pleasant to the taste and to the eye.

We must not take it for granted that the consumer will observe all this for himself. On the contrary, we must take it upon ourselves to make sure she doesn't overlook these points. "Quality at a reasonable price" is a slogan that will appeal to her desire to save.

The past few years have seen honey often relegated to the shelves of the luxury foods. For a small limited market that is all right. Honey can and does appeal to the gourmet who wants that dash of the different in his cuisine. But we want mass approval of our honey so we can get volume in sales. And the only way to get that is to prove to the economy-minded housewife that honey will not claim too large a hunk from her food budget.

We can tell her, for instance, that honey's many uses make it economical to buy. Emphasize these honey uses:

Ice cream sundae topper.
To beat up a meringue.
To sweeten cereals, beverages, sandwich fillings.
Combined with lemon juice for a cough soother.
Put with butter to make honey butter.
Broiled in the center of a half grapefruit.
Baked in a peach or a pear.
A spoonful placed on top of a muffin before baking.
To glaze vegetables and meats.
As salad dressing.

Such a listing should impress anyone, and you can include such a honey hint in your local advertising easily.

We should stress also that honey is a non-seasonal food that can be used at any time of the year, and is found on the market at a steady price the year around.

And we must repeat over and over again that honey costs no more to use than any other sweet, yet it is a high quality food with definite wholesome advantages for the family.

In other words, let's work on the angle that she is getting a BARGAIN for her money when she buys honey.

After all, what other PRODUCT can she buy that offers her so much for so little.

Editorials

Importance of County Associations

IT HAS BEEN SAID and we repeat, "County beekeepers' associations are part of the backbone of the beekeeping industry." They should be encouraged. Such associations are at the very grass roots of our industry.

Some county associations have been started and later have fallen by the wayside. Others continue year after year to render a worthwhile service. As an example, the Lorain County (Ohio) Association, started in 1919, has held regular monthly meetings since its inception. Can any other county association match this 35-year record?

At present there appears to be some lack of interest in county associations. This may be due in part at least to the lack of an appealing program for each meeting. It goes without saying that beekeepers are not going to attend meetings unless they get something out of them.

It seems essential, therefore, that the executive or program committee meet each quarter to set up at least a tentative program for three months. Secure an out-of-county speaker, if possible, every other month.

Encourage member participation on programs. A timely topic may be discussed by some one qualified to present it. That person can select two or three people for a further panel discussion of the topic, following his presentation. The President should exercise his prerogative by keeping each speaker within time limits.

Some associations are now discussing articles that appear in the leading bee journals. This seems to be a worth while idea.

There should be a welcoming committee to greet strangers or people new in the community, to make them feel at home. Beginner beekeepers should be encouraged to ask questions. Meetings should start and stop on time. A light lunch, doughnuts and coffee, served after each meeting gives an opportunity for people to become better acquainted.

The Introduction of Queens

IT WOULD BE INTERESTING to know just how many methods of introducing queens to colonies have been used and advocated during the years. Each beekeeper has a "pet" method of his own, which meets his requirements.

Some beekeepers seem to think that they should requeen periodically every season, regardless of the age of the queens that are being replaced. Others practice requeening every two years and there are still others who requeen when it seems necessary to replace old worn-out queens with young vigorous queens.

Some years ago, we practiced requeening each August. As we look back on what we did, we now realize that, in some instances, we may have removed and killed better queens than the ones we introduced. Some times a queen will do better work during the second year than she did during the first year. This may be the exception rather than the rule.

The majority of queens are introduced in queen mailing and introducing cages in which the bees are received from southern shippers. When queens are introduced during the honey flow, they are more likely to be accepted than they

are during a dearth of nectar. In some cases the queens being introduced are not accepted and the bees rear young queens from cells built after the queens being introduced are killed by the bees.

It has been our experience that some colonies positively will not accept queens, nor will they rear queens of their own, even when combs of eggs and young larvae are given to the queenless colonies.

In a book entitled "Are Bees Reflex Machines?" written by Hv. Buttel-Reepen, Ph. D., and published by The A. I. Root Company in 1907, we find the following statement: "It is curious that there are colonies that will not allow themselves to be requeened; then all artifices are in vain."

Regardless of how queens are introduced, it is extremely essential to have each colony headed by a good prolific queen because, as Russell Kelty of Michigan said at the recent Columbus meeting, "A good queen is the cornerstone of good beekeeping."

Serving South Africa

CONGRATULATIONS to the SOUTH AFRICAN BEE JOURNAL for its completion of 28 years of outstanding service to beekeepers in that land. Special credit goes to Louis Hardwick, who, as Editor, has been guiding the destiny of that publication for seven years.

Many valuable papers on apiculture, both for the hobbyist and the commercial beekeeper, appear regularly in this journal. Whenever possible, these articles will be reviewed in our monthly column, "From Foreign Lands".

Our best wishes for even greater success goes to the editorial staff as they continue to work for the improvement of the beekeeping industry in South Africa.

Let's Develop the Flavor Market

SINCE WE are in competition with hundreds of brands of cheap syrups, some of which are devoid of flavor, let's feature the matchless natural flavors of honey. There is a marketing opportunity for aggressive beekeepers who market honey for its special flavor rather than color and mildness.

Wild thyme, buckwheat, gallberry, and goldenrod honeys offer good opportunities for flavor marketing. It would mean, of course, that special jars and possibly labels would be required, but the returns would more than pay for the trouble. And this would just be the beginning, for foreign honeys offer even greater opportunities.

We are all aware of the foreign populations in our larger cities. These people are larger honey eaters than the average native born American. These folks would be anxious to buy honey from their homeland, or something similar in flavor. The Greek population, for example, would probably be very interested in the wild thyme honey produced in eastern New York State because Greece is a large producer of thyme honey. The Greeks like the thyme flavor and certainly wouldn't lose this desire after coming to America.

It is possible to reach this segment of the American population through advertisements in the foreign language newspapers. There are 187 newspapers that are printed in 29 languages with a combined circulation exceeding 3,000,000 readers. These foreign language newspapers are printed in 21 states.

A "Directory of Foreign Language Publication in the United States" can be obtained from the Waxelbaum Advertising Company, 10 East 43 Street, New York 17, N. Y. This list gives the circulation and the advertising rates for each of the publications.

Beekeepers in areas of special honey flavors are urged to consider the possibility of developing the "flavor market". And best of all, there is plenty of room for YOU and YOUR HONEY in this market. Sensible pricing should give a good return for the labor involved.

From the Field of Experience

Transferring Bees

by G. HARVEY CAMERON, Clinton, N. Y.

A COLONY HAD been established for several years in an inaccessible spot under a gabled roof, partly in the wall space behind insulation and partly under the attic floor. A number of attempts to kill the bees, to caulk the openings, and to remove the honey had all failed.

The house is stone with stucco and "half-timbered" trim and has a slate roof. The bees had found their way mainly through cracks in the cornice moulding but there were also several paths under the slate shingles. On this account it was impossible to fasten a bee escape over a single entrance. Instead a wire cloth cone was constructed about 12 inches long and eight inches in diameter tapering to a three-eighths inch opening. This was tacked securely around an eight-inch hole in a piece of plywood about a foot square. Wire screen was then used to make a cage surrounding the area of the bee's entrances with the plywood board acting as the cage front. The wire screen was tucked under the shingles wherever possible and crevices were caulked with oakum. Finally the edges of the cage and all joints were plastered down with roofing compound.

A week previous to the job mentioned above, a nucleus of about two pounds of bees and a queen had been established in a standard hive body. The bottom board was screwed fast with metal cleats. A wooden framework was built to support the hive on an extension ladder in such a way that the opening of the cone was within three inches of the hive entrance.

One night the entrance of the hive was closed with wire screen and early the next morning the nucleus was moved to the new location and set up on the ladder. The screening on the house had been partly closed the night before and while there were perhaps a hundred bees on the outside of the screen it was possible to complete the job without stirring them up. The operation was observed for about two hours and was completely uneventful.

The nucleus in place on the ladder.

A close-up of the nucleus.

Bees were flying in and out but since both lots of bees were Italians, it was impossible to distinguish them.

After three days there was a pile of dead bees in the cone and the cage. To make it easier for the bees to find the outlet, the cage and part of the cone was plastered over with black cement. The opening itself was found clogged with a few dead bees on several occasions. A week later an incision was made in the cone and the accumulation of dead bees was removed with a vacuum cleaner. Later the hive was inspected. The queen was found and all appeared to be going well. About two frames were well occupied with brood, much of it sealed. Also considerable honey and pollen had been collected.

LATER IN THE summer the cone again contained a pile of dead bees and there seemed to be great difficulty in finding the opening. After removing the dead bees once more, a cone of black paper was fitted over the wire cone leaving only an inch at the tip exposed. The bees immediately started coming out quickly and without difficulty. No further trouble of this kind was experienced.

However, after about three weeks it was discovered that a few bees were getting back into the house through other crevices. The latter were caulked and sealed. Again about four days later the bees had found new entrances under the shingles and more sealing was required. After this date no further entries were observed.

Late in September the upper part of the cavity was inspected from inside the attic and only an occasional bee was found, so the bee escape and cage were removed from the original entrance. Inspection a week later indicated that the bees had not yet located the honey in the house so a small quantity was smeared around the main entrance to attract them.

In October the supers, which were too heavy to lift in that position, were emptied one frame at a time and the bees brushed into the hive body. In the late afternoon when the bees had stopped flying, the hive itself was tied up in a rope sling and lowered to the ground using a third ladder as a crane. The total weight of honey in the hive and supers was well over a hundred pounds.

On the following day the cavity in the house was opened up by removing floor boards and wall board in the attic. Although the bees had had access to the honey for over two weeks, they proved to be very inefficient as robbers since a considerable quantity remained in the house, much of it very old and dirty. To complete the job and to ensure against future infestation, the old combs were laboriously dug out and destroyed and the cavity cleaned up and sealed. No evidence of disease was found in the combs.

Helping the Virgin Queen Mark Her Hive

by JULIUS LYSNE, Stockholm, Wisconsin

EVERY BEEKEEPER who has tried to rear his own queens has experienced a loss of queens because virgins flying out to mate fail to return to their own hives. It must be remembered that with a row of hives all painted white, it is very difficult for a queen to distinguish her own hive.

To overcome this difficulty, prepare an equal number of black and blue pieces of paper about four inches square. When a cell is given the first queenless colony, tack on that hive a piece of black paper and on the next hive a piece of blue paper. The third colony to be given a cell should, of course, be given a piece of black paper tacked in front. By alternately using a piece of black and of blue paper as a marker, the queen will have no trouble finding her hive on returning from her mating trip.

A colony given a cell should be inspected for developing queen cells in 14 days. One is almost sure to find a laying queen in each hive if the paper markers are used. The best time to give a cell and destroy the old queen is at the beginning of the main honey flow.

Managing Bees for the Tulip-Tree-Blackberry Flow

by HAROLD NAWROCKI, Charlerol, Pa.

SOUTHWESTERN Pennsylvania isn't a commercial beekeeping region, but if your locality is similar to mine, then perhaps my system of management can work for you.

Around home the soil is underlaid with a sandstone bedrock which means that legumes will yield at best with some restraint. This coincides with our part of the state being termed a high risk alsike-white clover region. Elm, willows, and soft maple provide abundant sources of early pollen and nectar. Following in close order come fruit bloom, dandelion, and winter cress, the wild mustard of the alfalfa fields. Then black locust, tulip-tree or yellow poplar and blackberry, all of which I consider the main honey plants. Along in the first week of June comes the long-awaited white clover bloom. In the fall goldenrod and aster provide plenty of winter stores.

The trick, of course, is to recognize which are the main honey plants. I kept records of hive strength and manipulations for years before I saw the obvious. The masking influence is the fact that under normal management the bees are just building up on the tulip-tree-blackberry flow. Briefly I will go through a year's cycle sort of slurring over similarities; for this system is only a regrouping of old ideas.

Blossoms and foliage of tulip-tree (Liriodendron tulipifera).—Photo by J. M. Buchanan, Franklin, Tenn.

Good wintering is essential for the coming year, so let's start at the right place with fall management. All that is required here is a two-story colony and a young queen to provide a strong field force to take advantage of the goldenrod-aster flow. That's it, unless we're lucky and have to extract a little surplus. Wintering consists merely of providing an upper entrance and reducing the lower one. I don't use paper for hive protection unless the yard is in an exposed position.

Spring Management

I remember how some years the bees were in pretty good shape at the end of May with plenty of bees in the hive and a fair amount of honey. But to my utter disappointment there was less honey in the hive at the end of July than when the flow supposedly started.

Finally I realized that I had been missing the boat in trying to harvest an ellusive, almost non-existent honey flow. Even with good wintering my bees just weren't in sufficient numbers to get a crop from the blackberry-tulip tree flow. Now I buy package bees to give to strong wintered-over colonies, and now my bees are in shape to do it.

Supering and swarm control is done early, and the honey crop in normal years is in by the time clover starts to bloom.

Comes summer when we ordinarily expect to get our honey crop, and

again there is a radical deviation in the accepted scheme of management. In bumper years clover will yield so I leave shallow supers on the boxes in case some honey does come in. But at this time the queen is laying rather heavily, meaning that the brood will consume a tremendous amount of food. Since a honey crop is at best uncertain from clover, I kill the queens toward the end of June.

This accomplishes three things: A young queen for next spring, a large field force for the fall flow, and the honey that the brood will normally consume is saved for wintering as a partial insurance against a short fall flow.

Producing Comb Honey

by MAJOR W. W. HINSHAW, Union City, Indiana

I HAVE BEEN interested in reading Propolis Pete's experience with his bees. Some time ago he said he was planning on producing some comb honey next year or bust. I have been looking to see which he did, but if he told us I must have missed it.

I have found out there is quite a bit more to producing comb honey than extracted honey, but do feel I have been fairly successful. However, I have had some hives that have just refused to make comb honey. These I generally catch in time to take the comb honey super off and get an extracted honey super on so as to get some honey in that way.

Here is a little trick that will be tried on such hives this year: As some hives are ready to go quickly into the comb honey super and start drawing out comb, I shall in a few days put another super on these under the one they have started, with a bee escape in an inner cover between. A few of the supers will thus be available to put on slow hives, which will greatly encourage the bees to go to work in the comb-honey super.

Now to begin with, I winter most all hives in double supers, and as the time for a honey flow draws near I look for the queen and if I am fortunate enough to find her I put her in the lower super, then put on a queen excluder. If I do not find her I put on the queen excluder. In a few days I generally can find her or decide which super she is in and put her below.

Now as soon as the honey flow begins I put a comb-honey super between the two large supers with an inner cover above the comb honey super. In this way they at once get used to going through the comb-honey super. Two days after this is done I either move the upper super to one side or put an inner cover under it. A solid inner cover will do. In this way all the field bees will now go to the main hive and start to make comb honey. (At least they are supposed to do so.)

After a few days, say about six days, there are a number of field bees in the super that I have removed, so I put this on the other side of the hive and they will mostly go then into the old hive to help make comb honey. Once in a while these bees in the super removed will make a queen cell and if let alone will form a nuc from which I can, if I desire, make another hive by fall. This method I find works very well. I should say here as soon as the top super is removed I also take off the queen excluder.

When they have the first super well started I put another on top for a few days. After it is well started I put it below the number one comb honey super. The first one will then be on top where I can better watch it and take it off as soon as finished.

I find the first beekeeper to get nice comb honey on the market is the one who gains thereby. If the hive is real strong and the flow is good I get the third one on as soon as possible. Another thing though to watch is not to put on more supers than they will complete as all comb-honey producers wonder what to do with half-filled sections. I assemble all of the partly-filled sections taken off early in the flow. These are placed in a super and put back on a good comb honey producing colony. Generally these are soon finished in good shape.

Selling Honey in Switzerland

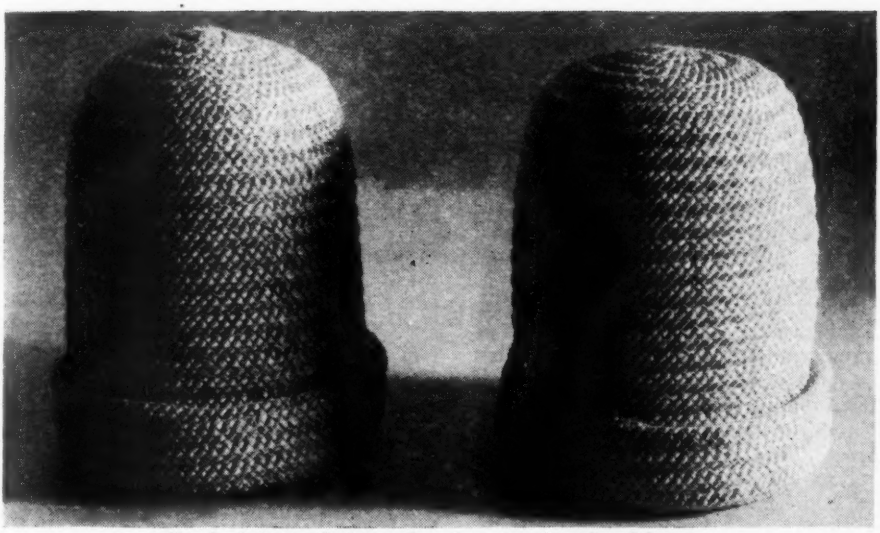
by THED. ISLER, Uzwil, Switzerland

No. 1. Pots made of clay holding one pound of honey.

DURING THE last few years we have had continuously fairly large honey crops in Switzerland. The imported honeys from Central America and from the United States as a rule are very low priced—mostly with the aid of the foreign governments. Contrary to this the Swiss government believes that the beekeepers should primarily help themselves as far as possible and so far has not granted any kind of concessions to us, although the operating costs and the sugar prices are rather high in Switzerland. During October '53 the Swiss beekeepers paid about eight and one-half cents for a pound of sugar on the wholesale market. Our private sugar traders must hold so-called "compulsory stocks" for emergencies and this is one reason for our high sugar prices.

The Federation of Swiss Beekeeping Associations has an agreement with the Agricultural Cooperatives whereby the latter is obliged to buy up to 50 per cent of the honey crops of each beekeeper, paying him a certain amount within a certain time. This agreement is not always satisfactory so that we tried to find new ways to promote the sales of our Swiss honey. New honey gift articles have been created and I am confining my description to the two most successful types.

Picture No. 1 shows a honey pot made of clay containing a pound of honey. On the front side of the pot a colored sticker is attached showing the heraldic signet of the Canton (i.e. the State) where the honey has been produced, say, for instance, Lucerne. The pots are being closed with a plastic cover, which after being put for an hour into cold water is put on and then gets very hard and stiff, so that the honey is being perfectly protected. It is the same kind of plastic that is used for covering medicinal bottles. On top of the plastic cover another sticker is attached reading "Honey from Lucerne". As you will note from the photo we have also made up different posters showing the characteristics of the Canton where the honey



No. 2. A type of straw skep to promote sale of honey.

has been grown and placed them behind the corresponding honey pots. The honey pots, after being emptied, make very nice flower vases. This set up has been a real success. One medium sized store in Berne sold about 400 pots within one week. (Price for the empty pot, Swiss francs 1.20 equals about 30 cents.)

Picture No. 2 shows a type of straw skep made of unbleached yellow straw. It stands on a bottom board with a rim made equally of straw. No painted hive opening and no bees are attached to it. The natural yellow color gives it a very warm and charming appearance. (Price, Swiss francs 5. equals about $1.20).

These articles make very attractive window displays. Honey exhibits can be very nicely arranged with them. As soon as a row or a couple of rows are shown, the impression is multiplied and many customers are induced to buy impulsively. Last, but not least, these articles fit very nicely on the family table and will add a cheerful atmosphere whenever they are used.

Handy Tools for the Beekeeper

by E. G. KYTE, Fairview, Pa.

DURING MY 35 years of beekeeping I have discovered a few common tools that have proven very useful in and around the honey house.

First of these is the common meat cleaver of small or medium size. I think the cleaver cannot be equaled as an instrument for scraping propolis and cleaning the wax and burr combs from supers and hives.

Dr. C. C. Miller in his book, "Fifty Years Among the Bees", used and recommended a common hatchet for this purpose, but I think he never discovered the meat cleaver for if he had he would never have mentioned the hatchet. The cleaver when used with a hammer is just the thing for cutting the tops out of the 60-pound honey cans or for cutting tin and roofing materials.

Another handy tool and section scraper is made by cutting about one-half of the blade off a common table knife, "the silver or plated kind", then file or grind the back of the knife to form a curved back at the point with a straight cutting edge.

Also a handy tool for handling cappings and cleaning up the spilled honey or wax from off the floor, is made by cutting about one-half of the blade off a brick or stone mason's trowel, then grinding the broken or forward edge down to a medium sharp edge.

More Comb Honey? Yes!

by CARL E. KILLION, Paris, Ill.

I AM ALWAYS interested in getting beekeepers to produce more comb honey and take advantage of this very neglected market.

The May issue of Gleanings had much to say about comb honey. There was a long article by Robert Mead, and an Editorial by the Editor of Gleanings.

I have tried to study and practice all the various methods of comb honey production during the entire time that I have been keeping bees. If and when something of real value was found to be good it was passed on to other beekeepers. My main object was to encourage and promote ideas, equipment, and management that would result in a finer piece of merchandise to be offered for sale. There would be no benefit in suggesting any beekeeping practice that would produce only average or inferior merchandise. When we talk or write about producing section comb let us refer only to the very best quality being produced and offered for market.

Our comb honey market in the past has suffered because beekeepers wanted to market everything or anything that was produced. If we are to again rebuild our comb honey market let us do it with quality, not with quantity.

Now with reference to the article by Mr. Mead and the editorial by Jack Deyell, I must disagree emphatically with both of them in their recommendations to beekeepers in producing comb honey.

First, I would like to discuss the article of Mr. Mead. He mentions about producing both comb and extracted honey on the same hive. "You can lift them up and slip in one or two comb honey supers." Later he mentions about swarm control and killing of queen cells. "The way it works here, is that the first trip around after the flow starts, I find a lot of cells to cut. The second trip around (I try to get around every ten days) I find less cells to cut, and by the third trip most of them will have given up swarming for the season."

I may have missed the boat in some of my work but I claim that you cannot produce quality comb on the same hive that you operate for extracted honey. Most beekeepers make the mistake of giving too much room at one time when they operate for comb (two supers).

In my 40 years experience I have never seen anyone produce comb honey by just going through the colonies every ten days. You cannot control swarming that way here in the Mississippi Valley. I doubt very much that it could be controlled anywhere. Mr. Mead also speaks of using more than a single hive body during the honey flow.

Now I want to disagree with Editor Deyell about using a double brood chamber for comb honey. In the first place, I wonder why Dr. Miller did not recommend the two hive bodies? Later I watched the late Charles Kruse and found that he used only a single hive body. Miller tried it, Kruse tried it, and I was a partner with Kruse for five years, but I had to be foolish enough to try it myself before I would believe it. Both Miller and Kruse would have used two bodies if it was practical. They found out and so have I that the use of two hive bodies during the honey flow is impractical.

I HAVE HAD quite a few years' experience in producing comb honey. During that period I have produced many cars of comb honey. I have tried producing comb in many ways as I wanted improvement if it was possible. Most of my bread and butter (and honey) comes from our production of section comb honey, therefore, if I ever decide to go broke real quick I will produce my crops on a double brood chamber hive.

Now I will do some agreeing. Comb honey may be produced over these two bodies—providing it is a bumper year. One could use a piano box for a brood chamber in those years and get results. But how often in Vermont, Ohio, Illinois, or Texas, do we have one of those bumper crops? One year, five, six, eight, or is it longer?

What happens when a poor or medium flow comes? I know, you have a lot of light weight travel stained sec-

tions that should never go on the market.

A real expert beekeeper may have a fair share of success trying to produce comb over a double brood chamber. Yes, but most amateurs then fail.

Now let us consider the pollen carried into the sections. The claim is made that less will be carried into the sections over the two bodies. There should be truth in that but in a car of our comb we will find **less than a super of sections with pollen in them.** If this is any yardstick to measure with, very little is gained by tugging and lifting that upper body on and off.

Did some one say the upper body does not have to be handled because the bees will swarm less? **Very little less.**

Growing Alfalfa Seed without Destroying Pollinators

by GEORGE F. KNOWLTON, Utah Agricultural College, Logan

ALFALFA SEED growers and beekeepers have become concerned about the killing of honey bees and native wild bees, since parathion, malathion, heptachlor, DDT, chlordane, lindane, and other agricultural poisons have been used extensively in our alfalfa seed growing areas. When control programs are properly planned and applied, however, it appears that there is less need for risk to bee pollinators from insecticides than formerly.

Increased numbers of honey bees and wild bees in the fields, and higher yields of honey have frequently followed well-timed DDT treatments of alfalfa fields for lygus and other insect control. This occurred when DDT was applied in the bud stage of alfalfa, before the blossoms appeared. When dieldrin, parathion, chlordane, lindane, DDT, and most other insecticides have been applied to alfalfa during the period of bloom, they have killed great numbers of bees. This has been especially true when chemicals were applied while bees were in the field.

Caution always should be exercised in use of poisonous agricultural chemicals. This will safeguard honey bee and native wild bee pollinators, as well as human health. An abundance of effective pollinators is essential to profitable alfalfa seed production.

Alfalfa seed growers will find it to their advantage to cooperate in safeguarding honey bees, bumble bees, alkali bees and other wild bees which are essential pollinators by:

1. Controlling the alfalfa weevil by applying the recommended amount of heptachlor, dieldrin or chlordane when first spring growth alfalfa is only one-half to two inches high. This control program should be completed before dandelions blossom in the alfalfa fields.

2. Applying the full recommended dosage of DDT spray or dust to alfalfa seed fields for lygus bug and alfalfa weevil control in the bud stage, **before** blossoms appear.

3. Putting this on at the rate of at least 1.5 pounds of actual DDT chemical in spray form or 20 pounds of 10 per cent DDT dust per acre. If this is done, additional insecticide treatment during the period of bloom may not always be necessary.

4. Applying toxaphene only for in-blossom control of lygus bugs or grasshoppers. If needed, put on one and one-half pounds of actual toxaphene as a spray or 20 pounds of 10 per cent toxaphene as a dust, per acre. Treat fields after 7:00 p.m. or before 7:00 a.m. to avoid poisoning bees.

5. Notifying nearby beekeepers before making extensive use of parathion, malathion, heptachlor, DDT, chlordane, calcium arsenate, lindane, BHC, or other poisonous insecticides if any bloom is on the field. This will permit beekeepers to move their bees to a safe location if they so desire.

6. Applying dusts at a time when the air is relatively still.

7. Not permitting dusts or sprays to drift upon fence row sweetclover, alfalfa, or other blossoming or pollinating plants being worked by the bees.

8. Avoiding use of dieldrin, parathion, heptachlor, malathion, arsenicals, DDT at more than 0.5 lbs. actual chemical per acre, chlordane, and

(Continued on page 381)

Asked & Answered

Young Bees Unable to Emerge from Their Cells

Question: Why do some of the young bees die in the act of emerging? They are able to uncap their cells but seem to be unable to get out.—Idaho.

Answer: It frequently happens, that the bees cluster away from a patch of sealed brood during cold nights in spring and autumn, resulting in the young bees becoming chilled. In some cases these young bees are nearly ready to emerge, but the chilling makes them too weak to do so. They can often be seen thrown out of the hive at the entrance, still alive but unable to crawl about.

Shaking Bees from Combs

Question: How do you shake bees from brood combs or out of supers?—Ohio.

Answer: Hold the brood-frame with the fingers under the projecting end of the top-bars with the palm of the hand on top of the top-bar. By holding the frame in this way one can give a quick jerk downward, which will dislodge most of the bees from the comb. Italian bees, when shaken cling to their combs more than hybrids or blacks, so it is more difficult to dislodge them. After shaking off most of the bees in this way those remaining can be dislodged by giving one end of the top-bar a sharp blow with the palm of the hand while holding the frame in a horizontal position in the other hand. This can be repeated with the other end of the frame. It is not possible to clean the bees out of supers by shaking the super, though in the case of black or hybrid bees many of them can be shaken out. Shaking heavy supers in this way is rather strenuous work, and it is much easier to drive the bees out with smoke or to place a bee-escape under the supers for 24 hours and let the bees go out of their own accord. While bees can be shaken off the combs as here described the bee-escape is much to be preferred.

Weight of Bees

Question: How many worker bees are there in a pound?—Indiana.

Answer: Work done years ago on measuring the weight of bees seemed to show that there were from 4000 to 5500 worker bees to the pound. Five thousand empty bees to the pound has for years been accepted as the correct average. Later work by the U. S. Bee Culture Laboratory under Jas. I. Hambleton, showed this figure was too high. Mr. Hambleton, under date of July 23, 1939, writes as follows: "We find it unreliable to use the common figure 5000 bees to the pound; consequently, we always take a representative sample, weigh this, count the bees and then make the calculation of the number of bees to the pound. In Technical Bulletin, No. 309, 'The Development of Package Bee Colonies' (page 24, table 9) Mr. W. J. Nolan gives some figures of the average weight of individual bees received in packages. The minimum average weight for these packages was 102.71 milligrams per bee. It would require 4416 bees of this weight to make a pound. The maximum average weight was 168.06 milligrams per bee or 2705 bees per pound. The average weight samples taken from 45 packages was 135.85 milligrams per bee or 3337 bees per pound. Mr. Frank Todd, in charge of our Pacific State Bee Culture Field Laboratory, has sent us some data in which the average is only 2608 bees per pound. Since the number of bees per pound is of particular interest in connection with package bees and since package bees are usually well fed at the time or shortly after they have been put in cages, 3500 bees per pound is probably a more accurate figure than 5000 bees per pound, under average conditions." There is a slight variation in the size of different races. Taking all these factors into consideration the actual number of bees to the pound may run from 2608 (Todd) to 4416 (Nolan). And so it would seem that 3500 bees to the pound is a safe average.

First Flight of Young Bees

Question: Why do bees come out of their hive at a certain time and fly about with their heads toward the entrance? Does this mean swarming?—China.

Answer: Young bees fly in this manner when taking their first flight. They turn their heads toward the hive in order to locate their home in reference to surrounding objects, so that they can return safely to their own hives. This is sometimes called the "play flight" of young bees. Usually this occurs shortly after noon. It does not indicate that the colony will swarm. When a swarm first starts to issue, some of the bees turn to look back as the young bees do in a play flight, but in the case of the issuing swarm the condition quickly changes to that of a rush of bees from the hive without turning to look back.

Bees Do Not Sleep

Question: Is it true, as stated by Maeterlinck, that bees never sleep?—N. Y.

Answer: During the active season when bees are busy gathering nectar from the field, the activities of the hive go on day and night. Comb building, the evaporation of the thin nectar, the feeding of the young, the ventilation of the hive as well as many other activities must go on in the night if the colony is to prosper. In this sense the colony never sleeps, but in another sense, individual bees do rest at short intervals suggesting to the observer a little nap. Whether this is real sleep or not is not known. During the winter and at other times when nectar is not available from the field, bees remain quiet in order to conserve their energy.

Amount of Honey Stored by Single Bee

Question: How much honey does a single worker bee gather in its lifetime? —North Dakota.

Answer: The amount of honey that a single bee can collect during its lifetime varies of course with the amount of nectar available. It is only those workers which are on hand during the honey flow that are able to gather any considerable amount. Under the most favorable conditions a bee that begins field work at the beginning of a good honey flow might carry in enough nectar to make about one-sixth of an ounce. This would be enough to fill about 15 cells of the ordinary depth in combs spaced one and three-eighths inches. This is counting a single worker carrying enough nectar to make three-tenths of a grain of honey at a load and carrying six loads per day for about 40 days. The actual amount gathered by a single bee must be much less than this. When nectar is scarce they carry smaller loads, and the average number of trips per day is probably not more than four or five. If each worker should carry in enough nectar during her lifetime to make one-sixth of an ounce of honey, a colony having 40,000 field workers would store over 300 pounds within six weeks. From this it would seem that during the honey flow of an ordinary season the field workers during their lifetime do not carry in enough nectar to make more than about one-twelth of an ounce of surplus honey.

Nectar Carriers and Pollen Carriers

Question: Do bees carry nectar at the same time they carry pollen?—Ohio.

Answer: Apparently bees carry either nectar or pollen, but usually not both at the same time. However, under some conditions many bees will be seen carrying both nectar and pollen. In such cases the pellets of pollen are smaller than when the bees are carrying pollen only. It is usually possible to tell which bees are carrying both by noting the size of the pollen pellets as well as the distention of the abdomen of the workers, caused by the filling of the honey sac.

"When you poke your nose in a flower around here . . . be sure a bee ain't beat you to it."

A Talk to Beekeepers

With Special Attention to Beginners

M. J. Deyell

My "Hunch" Was Right

FOR A NUMBER of years I have been acting on hunches. You will find this word in the dictionary, but the meanings given are not the same as what I have in mind. It is a colloquialism and means or refers to something away down inside of you that says you ought or ought not to do a certain thing. I have found that if I follow a hunch, I am usually right.

Last fall we had some very dry weather around Medina. In fact, during November and December I could drive into any of my out-apiaries. That was unusual. There is a saying that one extreme follows another. I had a hunch that we would have a lot of rainy weather this spring, following the dry spell last fall and sure enough, during April and thus far in May, we have had rain, rain, and more rain.

Practically all colonies of bees wintered well and have been unusually populous. This has meant that each strong colony needed at least one super at the beginning of the fruit bloom and dandelion honey flow which began the last week in April. Most of my yards are some little distance from the road and it would have been impossible to haul supers into the yards. Following my "hunch" I piled up enough supers beside each yard last fall for spring supering. All I had to do was to carry supers a few yards and put them on. That saved time and hard labor. I have seen springs when I had not been so far-sighted and had to carry supers from the road into the apiaries. That is hard labor. I dare say quite a number of commercial beekeepers have had to use tractors or jeeps to haul their supers from the main road into their yards.

It pays to have out apiaries in spots hidden from public highways. There are likely to be some light-fingered individuals in practically every neighborhood who seem to take a delight in either stealing supers and other bee equipment, or pushing the piles of supers over. I had a few supers stolen late last fall. If I had happened along while the thief was in my yard—well it is difficult to say what might have happened to him.

Jack Deyell

Colonies Build up Rapidly

It is amazing how quickly colonies with brood in three or four combs early in the spring will build up during the spring months, provided they have an ample amount of honey and pollen in the hives. If conditions are favorable for a honey and pollen flow, colonies will forge ahead rapidly. Ordinarily, a populous colony will gain one comb of brood each week and when conditions are very favorable, they will do even better than that.

It Pays to Have Good Combs

When checking through colonies during the spring months it is advisable to remove any poor combs that may be found in brood chambers. Combs that contain an excessive amount of drone cells or have stretched cells near the top bars of the frames should be cut out and melted up for wax or used in extracting supers if they are fairly straight with no large holes in them.

I have found, however, that combs with patches of drone cells used in extracting supers will have the worker cells filled first and the drone cells

left until the last. If the bees actually need the comb space, they will eventually fill the drone cells with honey.

Putting on Supers in Plenty of Time

Some beekeepers wait until the last minute before putting on supers. It seems advisable to put them on a little in advance of the time they are actually needed. Dr. W. E. Dunham of Ohio State University made a statement at a Chicago meeting a few years ago that has stuck with me. He said that in his opinion it is a good idea to put on supers with drawn combs quite early, or at least a little ahead of the major honey flow, so that bees may become accustomed to occupying the supers. Then, when the main honey flow does break, the bees have learned to go up into the supers and will begin work in them. It seems that bees are creatures of habit and giving the supers a little ahead of when they are actually needed gives the bees a chance to become accustomed to working in the supers. All of this sounds rather sensible to me.

However, it is inadvisable to give supers containing frames with full sheets of foundation too early and especially if there is a dearth of nectar. Bees, during a nectar dearth, seem to delight in chewing holes in full sheets of foundation. Some beekeepers may have their comb foundation chewed up by the bees and may blame the manufacturer of the foundation for what has happened.

Don't Let Colonies Starve

IN SOME PARTS of the North there is a dearth of nectar that occurs between the spring flow and the clover flow. In most areas, however, bees make a living from various sources of nectar. Make sure all colonies have ample stores right up until the beginning of the major honey flow. If there should be a cool spell of weather at that time some strong colonies that are short on stores are likely to starve. Such colonies should be given one or two ten-pound pails of sugar syrup made of two parts of sugar to one part of water, or some combs of honey if available.

When you find drones and drone brood being pushed out of the entrances of hives this is one of the first signs of starvation. If you should find young worker brood, pupa, being carried out on the alighting board it may be too late to feed—the colony may be dead, or dying.

This shows how bees are shaken from combs into a funnel that leads down into a bee shipping cage.

Michigan Experiences

Chapter 6

Two-legged Robbers

In a previous talk I mentioned robber bees which are somewhat troublesome at times. Two-legged robbers may also cause trouble.

The first year we were in Michigan two-legged robbers stole a few supers of honey from hives one night. I usually gave the apiary the once over each morning. One morning I discovered a few supers had been taken. We tracked the robbers from one of the

hives to the road that led through a woods adjacent to the apiary. Some rain had fallen so it was easy to follow the tracks along the road through the woods. We found some small clusters of bees that had been shaken off the comb on to the ground. Apparently, some of these bees were too young to fly. The robbing must have occurred early in the morning.

Fixing Up a Burglar Alarm

The first spring we went to Michigan, I ordered from Sears Roebuck Company what was called a Long Tom shot gun. It had a 36-inch barrel and sounded like a young cannon when discharged.

I tied this gun securely to the branch of a tree beside the apiary. The tree had plenty of leaves to conceal the gun which was pointed upward. A small wire was attached to the trigger, then run through a pulley near the trunk of the tree and extended about six inches from the ground for some distance along the side of the apiary where we thought robbers might enter, and anchored to another tree. We supposed the robber might return for more honey. It was a little difficult to drop off to sleep at night, as we expected to hear the report of the gun at any moment. However, we were never bothered with pilferers after that. Fixing the burglar alarm was like locking the stable door after the horse was stolen. I had to be very careful each morning lest I would run into the wire and cause the gun to go off. I had to let down the hammer of the gun each morning and cock the gun each evening. I never did set the gun off but came mighty close to it at times.

Letting Bees Clean the Empty Combs

After getting the summer honey extracted I wondered what to do with the supers to have the bees remove the small amount of honey that remained in the combs.

I had heard about stacking up supers in piles about six high, near the apiary, permitting the bees to enter each pile of supers through a small opening at the top or bottom, to clean out the honey.

The supers were placed in the open about 200 yards from the apiary, one afternoon, about six o'clock. At that time, during early August, bees were not gathering much nectar and it did not take them long to find the supers. In a comparatively short time, bees were swarming over the supers. It was a frightening sight and I had never seen anything like it.

The bees worked the supers until dark and then started in again the following morning. In due time the combs were cleaned up. However, I learned one lesson, the hard way, namely, that if too many bees work on empty virgin combs, they will make holes in the mid-ribs of the combs. Practically all of my combs were drawn from full sheets of foundation that spring.

My present system may not be the best but I stack my extracting supers containing combs away in the fall, wet, or as they come from the extractor. I aim to get these combs on hives of bees early enough the following season for the bees to get them cleaned out before the major honey flow starts. If such combs should be put on during a honey flow, there might be some granulated honey in the bottoms of the cells which would tend to encourage freshly-gathered honey to granulate in the combs. I have found that it is a good idea to put wet empty combs on hives late in the evening, especially during a dearth of nectar in the spring, to avoid getting the bees stirred up unduly. Bees then have time during the night to care for the wet combs. If there is danger of robbing, they may be set on the inner covers with center blocks removed with outer covers on top to avoid getting the bees stirred up, then put down under the inner covers later.

Bees that are close to highways or dwelling houses should be handled with care to avoid getting them excited.

Did You Ever Eat Woodchuck?

YES, I DID once, and wouldn't mind eating it again if I had the opportunity. The first summer we were in Michigan we noticed a young woodchuck that sunned himself near the barn. I asked my wife if she would

cook him if I would shoot him. It was a bargain. Incidentally, I used my Long Tom shot gun and didn't get too close to fill him too full of shot. We really enjoyed the woodchuck, for a change.

About twelve years ago, a beekeeper in western Ohio invited me to a coon dinner. The coon was young and tender. I don't know when I have enjoyed a dinner more than that one.

Now coons and woodchucks are vegetarians, and in my opinion, are much cleaner than hogs. If any of you beekeepers try eating woodchuck in the future, let me know how you like it.

Handling Laying-Workers

As you doubtless know, when a colony becomes hopelessly queenless, some of the worker bees may start laying eggs. These eggs will hatch and develop into drones.

It is rather difficult to get a queen introduced to such a colony. Various methods of dealing with laying worker colonies have been advocated during the years. The following method was used on five laying-worker colonies found the first season we were in Michigan. The laying-worker colonies were united with queen-right colonies. To do this, in the late afternoon I simply loosened the bottom boards of the hives containing large worker colonies, also the hive covers of colonies with which the laying workers were to be united, then late in the evening after bees were in from the fields I lifted each laying-worker colony on top of a queen-right colony as carefully as possible, then put on the covers. Apparently the bees united without fighting. At least I never did find a dead bee in front of the united colonies.

Orlando Meeting — Southern States Beekeepers' Federation

A GREAT OPPORTUNITY to visit Florida and view Florida beekeeping is coming up. December 1, 2, 3, 1954, are set dates for the Southern Conference Convention at Orlando, Florida.

Prof. David Dunavan of Clemson College, S. C., is rapidly whipping into shape the most interesting program for the biggest convention ever held in the South. Lynn Dewey with his committee from the Central Florida Association is planning some real entertainment. John DeMuth, Roy Novinger, and other members of the Florida Honey Co-Op. will have something of interest for everyone attending the convention. Roy Novinger is President of the Florida State Association and they will meet jointly with the Southern Conference.

J. W. Newton of Louisiana is in charge of plans for the bee-breeders. A. V. Dowling, Valdosta, Georgia, says most of the Georgia producers will be in Orlando for the big meeting. The Georgia State Meeting will directly precede the Orlando meet.

Every beekeeper is being asked to bring samples of his honey packs for an elaborate exhibit from many states. It is hoped these will be contributed to the pool of honey being collected for auction sale, with proceeds to the American Honey Institute. Beekeepers are being asked to bring in handy tools, gadgets or special equipment (that can be easily handled), for an educational exhibit of beekeeping inventions. The inventor's name and address should of course be attached. Pioneer beekeepers will be honored and it is rumored that a special gift will be presented those claiming 50 years with the bees.

Watch the journals for further reports and announcements on the Orlando meeting. Write H. S. Foster, Chief Apiary Inspector, State Plant Board, Seagle Building, Gainesville, Florida, should you desire special information. Mr. Foster is secretary of the Southern Conference, was formerly a Tennesseean and his social creed is pure southern hospitality. Let's meet in Orlando, December 1, 1954.—A. D. Hiett.

Just News

The **Westchester County Beekeepers' Association** will hold its next meeting through the kind invitation of Walter B. Crane at the Dover Hill Apiaries at Dover Plains, New York, off Route 22. Date will be Sunday, June 20th at 2:30 P.M. For those that come early, bring a picnic lunch and have a good time. All beekeepers in this area are invited to attend. Come one, come all, and have a good time.—Carlton E. Slater, Publicity.

The **Medina County Beekeepers' Association** invites everyone to attend its monthly meetings held the third Monday of each month at The A. I. Root Company meeting hall, at 8:00 P.M. These meetings will give you the latest information on beekeeping and teach you how to handle bees with a minimum of effort. The local bee inspector as well as a beekeeping specialist from The A. I. Root Company will be on hand at all times to answer questions. Four-H members are urged to attend.—L. B. West, President.

The **Minnesota** and **North Dakota Associations** will hold their annual summer meeting at Detroit Lakes, Minn. on July 23 and 24. A pot-luck picnic lunch will be served on the 23rd and the Minnesota Association will select a Honey Queen for the first time at this meeting. Details and entry blanks are available from the Secretaries office for the Queen contest. —Robert Banker, Sec.-Treas.

The **Middlesex County Beekeepers' Association** will hold its second outdoor meeting at the home of Dr. and Mrs. Herbert Anderson, 184 Ridge Street, Winchester, Mass. At the first outdoor meeting of the year held on May 22nd, a large group of our members gathered at Mrs. Fitzgerald's in Weston. The meeting was held one week earlier than usual because of Memorial Day. Mrs. Fitzgerald was most happy to welcome us to her home. Her bee hives were opened and inspected, as was the "Club Hive". The Club Hive will be moved to each outdoor meeting place through the summer so that we may watch the progress of a completely new hive. —L. C. Proctor, Secretary.

The **Connecticut Beekeepers' Association** summer meeting will be held June 26, at the Parish House of the Litchfield Congregational Church, on Connecticut route 25. The speaker for the morning session will be Rudolph Freund, Artist, who will talk on conservation and wildlife. The featured attraction for the afternoon session will be the beekeeping exhibit at the Litchfield Historical Society Museum. The location is in the Library Building on the south side of the Litchfield green from the church. This collection is of many antique items in beekeeping and should be of much interest to beekeepers and others. Several collections of honey-pots will be on exhibit for the day. Lunch will be pot-luck with coffee furnished. A cordial welcome is extended to all who would like to hear a talk on a matter relating to wildlife and to see beekeeping before the present era.—Philemon J. Hewitt, Jr., Chairman of Publicity.

The **Rock River Valley (Illinois) Beekeepers' Association** have scheduled their annual summer meeting and picnic for Sunday, July 11, 1954. The event will take place in Lowden Memorial Park, Oregon, Illinois. Everyone is invited.

The **Ohio State Beekeepers' Association** summer meeting, July 11, will be held in Bellefontaine, Ohio. This is a one-day meeting, and will be at the Logan County Fair Grounds on U. S. Route 68.

A.M.	Program
10:00	Logan County Welcomes You. —Gail Fultz, President.
10:15	Welcome Address. — H. R. Swisher, President Ohio State Beekeepers' Association.
10:30	Bees and Logan County. —Jack Hufford, Co. Agent.

11:00 Panel on comb honey vs. extracted honey production. —Elmer Smith, leader, Geo. Rehman, A. H. Clagg, James Eaton, and John Byerly.

P.M. 12:00 —Basket Picnic Lunch

1:15 Operating 4000 colonies of bees. —E. W. Long.

2:00 General Beekeeping in Ohio. —Dr. W. E. Dunham.

2:45 What's New in Holland Beekeeping. —Harry Vandenberg.

3:15 Problems in Producing and Packing a Honey Crop. —Ervin Stoller.

3:45 Fire or Drugs to Control A.F.B. —Walter Barth.

4:30 Judging for Ohio's Honey Queen.—(age 15 to 22 years and a beekeepers' daughter or wife.)

Other one-day meetings will be at Chillicothe, July 24, and at New Philadelphia, August 7. —R. L. Livermore, Sec.-Treas., Belle Center, Ohio.

The annual field meet of the **Eastern Missouri Beekeepers' Association** will be held June 13, 1954 at the Trail House of the Missouri Arboretum located at Grays Summit, Mo., approximately 35 miles west of St. Louis. Either Highway 50 or 66 out of St. Louis will lead you to the entrance of the Arboretum and markers will direct you to the location of the Trail House.

The annual field day of the **Lorain County Beekeepers' Association** will be held June 26 at the Wellington Fair Grounds, Wellington, Ohio. The **Medina County Association** has been invited to co-sponsor the affair. Everyone is invited and be sure to bring your lunch for the picnic.

Beekeeping Scholarship Available.—A Graduate Assistantship in Apiculture at the University of California is available for the coming year. The amount of the assistantship is $2016 for a 12-month period, $288 per month July and August, $144 per month September-June (one-half time) with paid vacation to be taken sometime during period from September through June.

More information concerning qualifications can be obtained from Dr. J. E. Eckert, Department of Entomology, University of California, Davis, California.

The annual field meeting of the **Tennessee Beekeepers' Association** will be held at the Shelby County Penal Farm, Shelby County, on June 20th. Prominent speakers will be on hand to talk on timely subjects.

CBA and ABF Members Wanted.—You can become a member of both the **Colorado Beekeepers' Association** and the **American Beekeeping Federation** by making out a check for six cents per colony to the **Colorado Beekeepers' Association.** The check should be sent to James Smith, 405 Maple Avenue, Las Animas, Colorado. The minimum fee is $2.50.—"B-Notes".

California Meetings.—The **Los Angeles County Beekeepers' Association** meets the 2nd Monday of each month. Contact Clarke DeCoux, 860 W. Callaveras, Altadena, California for the proper time and place.

The **Orange County Beekeepers' Association** meets the first Monday of each month at the Orange County Farm Bureau, 353 S. Main St., Orange, California.

Beekeeping Correspondence Course Available.—Ohio beekeepers can now sign up for a correspondence course in beekeeping under the direction of Charles Reese, Extension Beekeeping Specialist at Ohio State University. The course is free to Ohio residents but a charge of 75 cents is made to non-residents.

The correspondence course is made up of a number of lessons which the cooperating beekeeper studies and returns to the University. The lessons are corrected, marked, and returned to the student. A certificate of completion from Ohio State University is given at the end of the course.

Beekeepers interested in this course should write to the Office of Information and Educational Aids, College of Agriculture, Ohio State University, Columbus, Ohio.

Minutes of Price Support Hearings Available.—The printed minutes of the honey price support hearings recently held in Washington, D. C., and attend- by the leaders of the beekeeping industry are now available to Gleanings readers. Get your copy from the United States Government Printing Office or contact your U.S. Senator. Just ask for Part II of the General Farm Program Hearings before the Committee on Agriculture and Forestry, United States Senate, 83rd Congres, Second Session on S. 3052.

A Correction

We wish to correct an error in "Who's Who" that appeared in the May issue of Gleanings. E. M. Miller of Frankfort is the official Chief Apiary Inspector of Kentucky in place of Fred Miller of Frankfort.

Referring to the listing for Wyoming, beekeeping is not taught in the Agriculture College, neither is there any extension work in beekeeping being carried on in Wyoming.

In Colorado, Joseph O. Moffett, Fort Collins, is the professor in charge of the beekeeping course instead of L. B. Daniels.

News on Honey Wine.—A bibliography of 57 references, designed to assist the honey-wine researcher and manufacturer in their work, has just been prepared. Old and new literature is included in this list.

Many of the early works cited are of general interest only but might be of some help to the manufacturer in establishing practices in accordance with legal requirements.

Single copies of this valuable list of references can be obtained FREE by writing to Roger A. Morse, Dept. of Entomology, Comstock Hall, Cornell University, Ithaca, New York.

The **Los Angeles County Beekeepers' Association** has instigated a novel method of inexpensive honey advertising. Using the slogan "Eat Honey More Often" as advocated by the California Honey Advisory Board, and a picture of a honey bee, an attractive rubber stamp has been worked out which is being used as a return address stamp on beekeepers' outgoing mail. These stamps are made up in two ways—either complete with name and address, or plain for use with printed envelopes.

The Association will be glad to supply any beekeeper with one of these rubber stamps at the very nominal cost price of $3.25 (with 3 line return address) or $2.25 (plain), payable in advance. This price includes tax and postage charges. Send your orders to Clark R. DeCoux, 860 W. Calaveras Street, Altadena, Caliifornia, making all checks payable to Los Angeles County Beekeepers' Association.

Let's keep our slogan in front of the buying public, and what better way is there to do this than through the mail?

THE **Ohio Beekeepers' Association** will sponsor three summer meetings to be held in different points throughout the State. These one day affairs, planned in cooperation with the **Logan** and the **Tuscarawas Counties Beekeepers' Associations,** will feature a varied program designed for hobbyists and commercial beekeepers, plus a banquet in the evening.

The first annual summer meeting and picnic will be held Sunday, July 11, at Bellefontaine. This will be followed by similar one day meetings at Chillicothe, July 24, and at New Philadelphia, August 7th. The Chillicothe meeting will be held on the premises of the Livestock Producers' Association on South Watt Street.

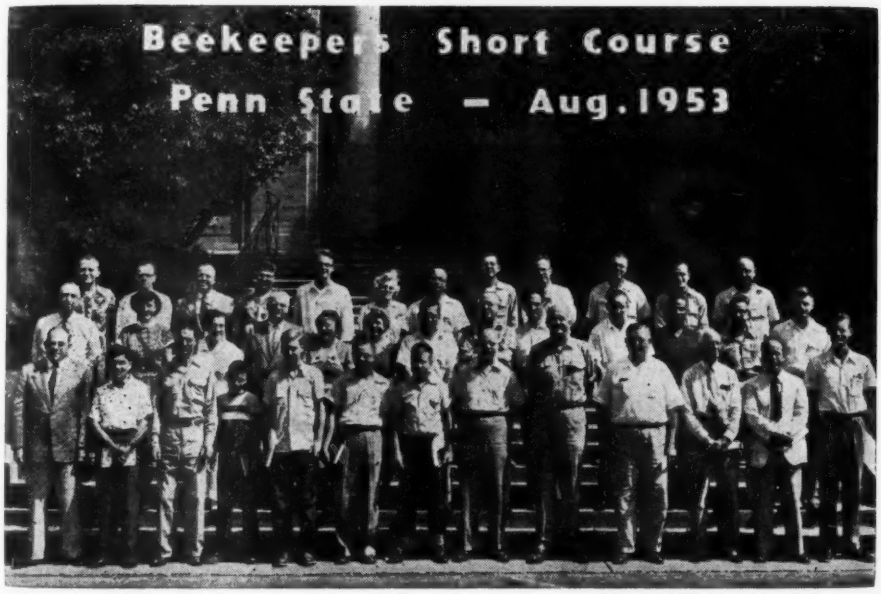
Candidates for the FIRST OHIO HONEY QUEEN will be chosen at the regional meetings with the final selections being made at New Philadelphia. Candidates must be between the ages of 15 and 22 and a bonafide relative of a beekeeper. The Honey Queen will be selected on the basis of appearance and personality, and the winner will receive a handsome trophy. The winner will be expected to appear on expense paid honey promotional programs that will include television and radio should developments require it.

Further details regarding requirements for Honey Queen candidates together with reservations for the banquets, can be obtained by writing to R. L. Livermore, Box 13, Belle Center, Ohio.—H. R. Swisher, President.

(Continued on page 376)

Penn's Golden Anniversary and Short Course Combined During August 16 to 21

by EDWIN J. ANDERSON



THE PHOTOGRAPH shows the beekeeping short course students who attended the class of August, 1953, at Penn State University. As in past years, this class of students and speakers came from many parts of the world.

The students represented six states from Georgia to New York and the country of Columbia, South America. The speakers included Dr. Eva Crane of England, Dr. Otto Morganthaler of Switzerland, A. W. Stephens of N. C. and George Rea, W. W. Clarke, and Edwin J. Anderson, of Penn.

The 1954 Short Course as previously announced will be held August 16 to 21 and will be combined with the Golden Anniversary Celebration and meetings on August 20 and 21. The speakers will again be outstanding in the field of beekeeping from both Canada and the U.S.A. The speaker from Canada will be E. Braun, Senior Apiculturist from the Central Experimental Farms at Ottawa. Dr. Braun will speak on the subjects of Clover Pollination, Honey Processing with the Continuous Flow Method, and Dividing Over-Wintered Colonies for Increased Honey Production.

Mr. J. I. Hambleton, Head, Section of Bee Culture and Biological Control, Beltsville, Maryland, will be present and discuss the latest developments in the field of beekeeping research. Both Dr. Braun and Mr. Hambleton will speak on Friday and Saturday August 20 to 21.

Those attending the meeting will also have the pleasure of hearing Dr. Milton Eisenhower, President of the University and brother of President Dwight Eisenhower, welcome the group to the University Campus on Saturday, August 21 at 1:30 p.m.

The Short Course includes a fairly complete series of lectures, demonstrations and work with the bees on the subjects of seasonal management (spring, summer, and fall), preparation of honey for market, disease control, queen rearing, and care and handling of beeswax. Movies and slides will be used extensively during the evening meetings. The cost of the course is $7.50 for residents of Penn. and $12.50 for those attending from other states. To register for the short course write A. L. Beam, Dairy Building, State College, Pa.

Buy and Sell

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 15c per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month preceeding publication.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Onsted, Michigan.

IOWA honey, one can or truck loads. Russell D. Smalley, Beaver, Iowa.

CLOVER extracted honey in sixties. Abram Brubaker, Lancaster, Pa., Rt. 2.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We can not guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

CASH for your comb honey and all types extracted. Send sample and best price. Buckeye Honey Co., 3930 No. High St., Columbus 14, Ohio.

CASH for Beeswax. Write as to quantity and we will quote price. Muench-Kreuzer Candle Co., Inc., Syracuse, N. Y.

HONEY WANTED — All grades and varieties. Highest cash prices paid. Mail samples. State quantity. HAMILTON & COMPANY, 2613 South Yates Ave., Los Angeles 22, California.

WRITE FOR shipping tags and quotations on rendered beeswax. We buy from one pound up and if you have over 25 pounds let us work it into foundation for you at a 25 per cent saving. Walter T. Kelley Co., Clarkson, Kentucky.

HONEY WANTED for cash. All grades. Good used cans for sale or trade for honey. John Tideswell, 2711 North 63 St., Omaha, Nebraska.

WANTED — White extracted or comb honey. Send sample. Millersport Honey Co., Millersport, Ohio.

HONEY WANTED, all grades in 60's. Mail samples advise quantity, best price. A. I. Root Company of Syracuse, 1112-14 E. Erie Blvd., Syracuse, N. Y.

WANTED — Honey, all grades. Quote prices and send sample. Write Stoller Honey Farms, Latty, Ohio.

HONEY WANTED; Large quantities. All grades. Cash price. Send samples. Finger Lakes Honey Co-op., Groton, N. Y.

WANTED—Light amber-clover and fall-flowers honey. Cloverdale Honey Co., Fredonia, N. Y.

WANTED—100 cases No. 1 comb honey. Lloyd E. Allen, Tipton, Michigan.

CASH FOR YOUR HONEY—Light extracted or comb. Regular trade send sample. 60-pound cans furnished if desired. W. R. Moomaw, Stone Creek, Ohio.

BEST CASH DEAL for your honey (any grade) and beeswax. Alexander Company, 819 Reynolds Road, Toledo, Ohio.

FOR SALE

WRITE FOR CATALOG — Quality Bee supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies and Comb Foundation. Onsted, Michigan.

THE BIGGEST BEE SUPPLY Catalog published (64 pages) free for the asking. Listing many items not found in other Catalogs. No agents—buy direct and save 20%. WALTER T. KELLEY CO., CLARKSON, KENTUCKY.

FOR SALE — New heart cypress 10-frame bottom boards. K.D., 10 or more, $1.00 each; 50 or more, 90 cents each; 100 or more, 85 cents each. One nailed up sample postpaid, $1.25. Fred L. Poole, Elizabethtown, Rt. 2, Box 67, No. Car.

QUEENBEE PAINTING OUTFITS, $1.50 postpaid. Southwick Apiaries, Waban, Massachusetts.

ELECTRO Filling Machines, users and distributors. Write Stoller Honey Farms, Latty, Ohio.

ROBINSON'S "WAVY-WIRED" FOUNDATION—a superior product at a lower price. Also plain foundation. We work your wax and render combs and cappings. The only foundation plant in the East. Robinson's Wax Works, R. D. 3, Auburn, N. Y.

NOW AVAILABLE, Fumigil for control of Nosema disease in bees. Write for prices and circular by Abbott's Laboratories. PRAIRIE VIEW HONEY CO., 12303 12th Street, Detroit 6, Michigan.

FOR SALE—100 ten-frame hive bodies with frames $1.00 each; 100 8-frame, 75c each, hive bottoms and tops, comb honey supers, shallow extracting supers, 50c each. Large twin-screw wax press and tanks, $10.00, 25,000 plain folding cartons for cut comb or plain 4¼ sections, $1.25 per thousand. H. G. Quirin, Bellevue, O.

FOR SALE: Root 45-frame honey extractor. Ken Kruger, Clear Lake, Wis.

FOR SALE—One four-frame automatic reversible extractor No. L25. One Massey electric knife, never used. S. R. Cate, Winfield, Kansas.

AT COST—4M 2½-lb. new Continental tin cans; 2½-lb. square glass jars; 2½-lb. can single shipping carton. Also beekeepers' supplies. Roscoe F. Wixson, Dundee, New York.

FOR SALE—Two used 2-frame reversible extractors, one Kelly, $35.00 and one Lewis, $25.00, both in good working condition. Don F. Miller, 3846 Orders Road, Grove City, Ohio.

ROSEDALE UNCAPPING PLANES; NOW DUTY FREE—Speedy uncapping—easy to handle—adjustable depth of cut. Satisfactory performance fully guaranteed for one year. Rosedale Co., 509 Rupertsland Ave., Winnipeg, Canada.

IF YOU CAN'T LIFT those heavy supers let Kruse's Super Lifter and transport truck do it for you. Easily handles 150 pounds or more. Low in price too. Money-back guarantee. Why not give it a trial. Write for illustration and prices. Frode A. Kruse, Rt. 1, Luck, Wisc.

FOR SALE—Supers with frames, no combs, 35c; electric knife, $3.00; honey pump, $8.00; two 300-pound tanks, $6.00; 600-pound tank, $4.00; ½-ton tank, $10.00; tub, $1.00; 20-frame radial, $25.00; 2-frame reversible, $6.00; 4-frame extractor, $4.00; melter, $2.00; 10-pound pails, $3.00; 5-pound jars, 30 cents; 2-pound jars, 30 cents; 1-pound jars, 40 cents; observation hive, $1.00; feeders, 5 cents; inner covers, 10 cents; bee escapes, 5 cents; excluders, 25 cents; covers, 20 cents; bottom boards, 20 cents. John Flock, 609 West Tenth St., Sterling, Illinois. Phone: 4905.

BEES AND QUEENS FOR SALE

We use all possible care in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for a certificate of inspection as a matter of precaution.

CAUCASIANS. 2-lb. pkg., $3.00; 3-lb. pkg., $4.00. Untested queens, $1.00 each; 100, $75.00. Lewis & Tillery Bee Co., Greenville, Ala.

YELLOW ITALIAN BEES. Real producers. Health certificate. Satisfaction guaranteed. 2-lbs. with queen, $3.50; 3-lbs., $4.50; 4-lbs., $5.50; queens, $1.00. Airmail postpaid. O. E. Brown, Route 1, Asheboro, North Carolina.

CAUCASIAN queens, personally raised, very hardy, long lived good honey-gatherers, gentle. Young laying queens, $1.10; 10 or more, $1.00 each. Fred Brock, McDonald, Tenn.

NORTHERN ITALIAN QUEENS—Ready June 25th, $1.00 each; 10 up, 90 cents. Shirl Baker, Rodney, Michigan.

TWENTY-ONE YEARS OF BREEDING. Jersey queens for bumper crops. $1.00 each. Milton Stricker, R.D. 1, Annandale, N. J.

THREE-BANDED ITALIAN bees and queens. Extra good workers and very gentle. 2-lb. with queen, $3.00; 3-lb. with queen, $4.00. Untested queens, 1 to 25, $1.00; 25 to 50, 90 cents; 50 up, 80 cents. Add 25 cents for the Starline Hybrids. Alamance Bee Co., Graham, N. C.

FOR SALE—Three colonies Italian Bees, and extracting equipment. Domenico Cristino, 12702 Leeila Ave., Cleveland 11, Ohio.

HONEY LABELS
Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

ITALIAN
Package Bees and Queens
Jackson Apiaries
Box 58 Funston, Ga.

Booking orders now. Over 30 years a shipper. Send for Free Circulars.
BLUE BONNET APIARIES
Weslaco, Texas

Package Bees & Queens
Quality & Service
C. F. KOEHNEN & SONS
Glenn, California

QUALITY BRED ITALIAN QUEENS
March 10 to June 1 $1.00 each
June 1 to Nov. 1 .50 each
All queens shipped Air Mail and guaranteed to please.
Walter D. Leverette Apiaries
Fort Pierce, Box 364, Florida

HONEY WANTED
Carloads and less than carloads. Mail sample and best prices in all grades.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

ATTENTION:

By agreement and co-operation with the Honey Bee Improvement Association we have been supplied stock for drones used in producing queens for

4-WAY ISLAND HYBRID BEES

Do not be misled. Any other Kelley's Island or Island Hybrid queens are not mated to the Island Hybrid Drones to give proper mating to produce 4-way bees.

Bees developed on Kelley's Island have been known for more than a year now as ISLAND HYBRIDS.

Do Not Be Misled.

Prices after May 20th

	4-Way Island Hybrid	Rossman Stock
1-25	$1.25 ea.	$1.00 ea.
26 or more	1.15 ea.	.90 ea.

Package prices, 25 cents each less than present prices.

Rossman Apiaries

P. O. Box 133 Moultrie, Ga.

CAUCASIAN

QUEENS	QUEENS
1 - 24	$1.00
25 - 49	.90
50 - up	.80

Howard Weaver

Navasota, Texas

Queens Queens

ITALIAN

Nice large queens 55c each

Mitchell's Apiaries

Bunkie, La.

GOLDEN ITALIAN bees and queens. Very gentle and real yellow. 2-lb. with queen, $3.00; 3-lb. with queen, $4.00. Select-untested queens, 1 to 25, $1.00; 25 to 50, 90 cents; 50 up, 80 cents each. Carolina Bee Farm, Graham, N. C.

CAUCASIAN bees and queens. Very gentle and good workers. 2-lb. with queen, $3.00; 3-lb. with queen, $4.00; Select-untested queens, 1 to 25, $1.00; 25 to 50, 90 cents; 50 up, 80 cents each. Black River Apiaries, Currie, N. C.

BEES FOR SALE. Good equipment and strong colonies. Owner unable to care for any more. Write to House of the Good Shepherd, 8830 Bluemond Road, Milwaukee 13, Wisconsin.

SEEDS

HONEY PLANTS our specialty. Catalog on request. Pellett Gardens, Atlantic, Iowa.

MISCELLANEOUS

Bargains in new or used honey cans or Root Supplies for cash or honey. Buckeye Honey Company, 3930 N. High St., Columbus 14, Ohio.

SECTION COMB HONEY production steps—$1.00. Comb Honey Production Glossary—50c. United Industries, Dept. L, Box 449, Madison 1, Wis.

HAVE FOR SALE and WANT TO BUY used extractors of all kinds. John Layman, 702 West 6th Street, Bloomington, Indiana.

MAGAZINES

Know interesting facts concerning the bees of India through the INDIAN BEE JOURNAL, published in English by the Bhupen Apiaries (Himalayas), Ramgarrh Dist. Naini Tal, U. P. India, or available through them. Subs. Rs9/ or 15 shillings or $2.25 yearly. Sample copy post free for Rs ½/, or s 2/6, or 40 cents (international Money Order). Payment in mint postage stamps of your country accepted.

ARCHIVE OF BEE SCIENCE (Archive fur Bienenkunde), oldest scientific, independent bee journal in the world. Select feature material gives lasting theoretical and practical knowledge. Sample copies available. Two large 1953 editions for the low price of DM 5.50. Biene-Veriag (Bee Publishers), Lindau (B), Postcheck Karlsruhe 5581, Germany.

BEE WORLD, the international journal of the Bee Research Association, published monthly, contains the latest research reports on bees and beekeeping. With Apicultural Abstracts it costs $3.00 per annum. Apicultural Abstracts only $1.75 per annum, from the Hon. Subscription Secretary, Bee Research Association 10 Barnett Wood Lane, ASHTEAD, Surrey, England.

Read the South African Bee Journal. Published every two months. Subscription 7/6 per year to the Treasurer, P. O. Box 3306, Cape Town, South Africa.

INTERESTED in Angora Goats? Read the Sheep and Goat Raiser, Hotel Cactus, San Angelo, Texas, the only ranch magazine published serving the Angora Goat industry. Subscription $1.00. Sample copy, fifteen cents.

U. S. Savings Bonds come in all sizes . . . . .
and grow bigger every year.

STARLINE SUNKIST ITALIANS

You can pay more but will not get better quality. We offer two outstanding queens: Dadant Starline and Sunkist Italians.

	Italian Q.	Starline Q.	
1 -24	75c	$1.40	All queens clipped, airmailed. Marked on request.
25 -99	70c	1.30	
100-up	65c	1.20	

Reg. U.S. Pat. Off.

SUNKIST BEE CO. CONVENT, LA.

GIRARDEAU APIARIES
Tifton, Georgia
Shippers of
ITALIAN
Package Bees and Queens

QUEENS
By Return Mail 50c
BRIGHT 3-BANDED ITALIANS
33 years as shippers

— PRICES —

2-lb. pkg. with queen	$2.50
3-lb. pkg. with queen	3.00
Tested queens	1.00

Package bees are shipped express F.O.B. If wanted shipped parcel post, add postage. Small orders, parcel post much cheaper.

NORMAN BROS. APIARIES
Ramer, Ala.

SULLIVAN'S ITALIANS
Effective May 15 These Prices:

2-lb. pkg. with queen	$2.25 each
3-lb. pkg. with queen	3.00 each
Queens	.65 each

Live delivery and satisfaction guaranteed.

SULLIVAN'S APIARIES
Gilbertown Ala.

Italian Queens
EUGENE WALKER
Rt. 2, Box 207
Live Oak, California

CONTROLLING ROBBING IN HONEY BEES

(Continued from page 334)

made while there is still a nectar flow in progress.

Preventive Measures

During early fall the hive entrances are reduced in size according to the strength of the colony. A strong colony should have about a two-inch opening after the hot days of summer and early fall are past.

If robbing is in progress, green weeds or bunches of grass placed at the entrance slow the action of robbers and allow the guards to take up advance positions. In severe cases, green grass may be stuffed into the entrance to stop all flight. The grass soon dries enough that bees can force their way in and out, and by that time the robbing has ceased.

If only one colony in an apiary is being persistently robbed, dust the bees at the entrance with flour or other noninjurious dust and note which of the other hives receive dusted bees. Exchange the locations of the two colonies concerned and the robber colony will be robbed by its own bees. The robbing soon stops.

QUEENS

Italians of the George W. Moore strain, personally raised and purely mated for the remainder of the summer, at 60 cents each.

HANSON HALL BEE CO.
Livingston, Ala.

J. E. WING & SONS
41 Years Continuous Service
Italian Package Bees and Queens
Our Specialty
Knights Landing, Calif.

FLOWERS' QUALITY QUEENS

Breed from hives that made 300 pounds of honey, gentle and prolific. All queens mated and laying guaranteed. Prompt shipment.

1 to 1000, prepaid airmail, 50c each

FLOWERS BEE COMPANY
JESUP, GEORGIA

ALWAYS BEST AHEAD OF THE REST

BERRY'S
"Old Reliable" Strain Italian Bees

Definitely, the **PREFERRED** stock of **MAJOR SUCCESSFUL HONEY PRODUCERS** the **WORLD** over. **INSURE** your crop with young, vigorous, producing, **DEPENDABLE BERRY BEES.** Fifty-nine years of **SELECT** breeding.

Prices After June 1st:

Package Bees with Queens and Individual Queens

	Queens	2-lb. Pkg.	3-lb. Pkg.	4-lb. Pkg.	5-lb. Pkg.
1-24	$ .75	$2.60	$3.60	$4.60	$5.60
25-99	.70	2.55	3.55	4.55	5.55
100-up ...	.65	2.50	3.50	4.50	5.50

For prices on Queenless or Booster Pkgs. deduct price of Queen

M. C. BERRY & SON P.O. BOX 684 MONTGOMERY, ALA.

JUST NEWS

(Continued from page 370)

The **Venango County Beekeepers' Association** will hold its summer meeting on Wednesday, June 16 at the home of John P. DeWoody, R. D. 3, Franklin, Pa. An inspection of the apiary will take place at 4:30 p.m. The program will follow the supper hour. Mr. Walter Barth, Associate Editor of Gleanings will participate in the program. Movies will be shown.

Bees in the Headlines—Free publicity in the way of articles and pictures in newspapers and journals outside of the beekeeping field are always welcome. While the industry is not so fortunate as to get this publicity every month, we seem to get a lot of it this spring. Here are some of the beekeeping items that have recently received wide reading:

"Transportation of Honey Bees to the North by Shipper Each Year." Rail Oddities, a publication of the Association of American Railroads.

"New Methods and Developments in the Beekeeping Industry" by W. A. Stephen of North Carolina. Farmers Federation News. March 1954.

"Honey Guide: The Bird that Eats Wax." April 1954 issue of National Geographic Magazine. See also "From Foreign Lands" in the April issue of Gleanings.

"The Miracle Worker". Story of a beekeeper and the role of honey bees. April, 1954 issue of Farming with G.L.F.

"Spring Management" by W. W. Hosea of the H. G. Hastings Seed Co., of Birmingham, Alabama. Progressive Farmer, April 1954.

New Yorkers have home study course in beekeeping. A Cornell farm study course in beekeeping, designed to help New York beekeepers make their apiaries more profitable, is available upon request.

Ownership of an apiary or at least one colony of bees is necessary, since the course requires actual handling of bees and of their products and equipment as well as the study of books and bulletins related to beekeeping. Writ-

(Continued on next page)

26th Year of Faithful Service

(1) New Improved Dadant Starline 4-Way Hybrid Queens

(2) GARON'S Own 3-BANDED QUALITY ITALIAN Bees and Queens

Reg. U. S. Pat. Off.

	QUEENS		Package Bees and Queens		
	Italians	Starlines	2-lb.	3-lb.	4-lb.
1-24	95c	$1.40	$3.15	$4.10	$5.05
25-99	90c	1.30	3.00	3.95	4.90
100-up	85c	1.20	2.75	3.70	4.65

When Dadant Starline queens are wanted with packages, add 25c extra per package
Queens clipped and/or marked, also Air Mailed upon request at no extra charge

GARON BEE CO. **Donaldsonville, La. U.S.A.**

BETTER BRED QUEENS **Three Banded Italians**

The package shipping is over and we have a large Queen Yard ready to supply your needs. All poor queens should be replaced. Now is the time to do it and get the best production. Our "Better-Bred Stock" will please you and the price is right.

65c each, any quantity.

Calvert Apiaries **Calvert, Alabama**

JUST NEWS

(Continued from previous page)

ten reports on 13 lessons and on 8 out of 10 practical exercises, plus a final examination, are required. All papers are graded and returned to students.

Applications and information concerning the course should be addressed to Cornell Farm Study Courses, Roberts Hall, Ithaca, New York.

Another Correction for Who's Who. —The new apiarist for New Brunswick is Adam J. Wilson, Department of Agriculture, Fredricton, N. B.

CAUCASIANS
CARNIOLANS

Hardy, prolific, rapid build-up, finest of all workers, GENTLEST OF ALL RACES; which saves time, sweat, patience and work, safest in towns, near neighbors and highways.

Untested Queens .....$1.20 Air Mail
Discount on quantity orders.

Formerly the Apiary of ALBERT G. HANN, now being carried on by his daughter and partner.

(Mrs.) Catherine H. Struble
Dick Houston
Glen Gardner, N. J.

O.A.C. PRESSURE STRAINER

(Continued from page 333)

ature is lower the use of a coarser straining sand is advisable.

In most cases the operating pressure will reach 10 to 15 pounds before the chamber reaches the temperature of the honey. When the strainer has reached normal operating temperature the pressure will be about two to three pounds for a flow of 300 pounds per hour at 120°F. The pressure will slowly increase during the operating period. Normal operating pressures will increase with increased volume or decreased temperature. When the pressure starts to rise rapidly it is time to shut down and change the gravel or sand.

In packing plants it might be advisable to use two strainers in order to avoid an interruption in the flow. The strainer may be cleaned quite readily by draining off the head of honey through the tap provided, disconnecting, and dumping out the sand. The screen is washed with cold water and the cylinder recharged. A complete changeover should not require more than 15 minutes' time.

Reduced Prices

On shipments to be made on and after May 20th our two-pound package with a young, laying Bambi brand queen is only $2.50. And the three-pound package with a young, laying Bambi brand queen is $3.00.

Wire or air mail your emergency orders for (extra) young, laying Bambi brand queens at $1.00 each. Tested, Bambi brand queens $2.00 each.

Southern Apiaries & Supplies Company

Chatom, Alabama

THRIFTY QUEENS

Three-banded Italians only

Lots of 100 ..... $55.00
Smaller lots, each ..... .65

REMEMBER — Thrifty Bees are guaranteed to please.

W. J. FOREHAND & SONS
Fort Deposit, Ala.
Breeders Since 1892

Renee Brand Queens

1-25 ..... .95 26-up ..... .85
Live delivery guaranteed
Prompt shipment
Queens Air Mailed,
Clipped on request
SILVER HIVES APIARIES
Enterprise, Florida
We do our best to satisfy.

U. S. Savings Bonds come in all sizes . . . . . and grow bigger every year.

FROM FOREIGN LANDS

(Continued on page 346)

be operated on, disappeared after he drank a solution of royal jelly.

Biologists report that even cancer-diseased chickens were successfully treated. Of six chickens, three were treated and cured whereas the three not treated died.

The condition of patients with heart disease also improved, reports a Paris hospital. Nerve and other internal diseases were treated, and improvements were noticed immediately.

Even though chemists are able to analyze royal jelly, there are still a lot of unknown factors involved. It seems that a new miracle medicine has been discovered in royal jelly—but even though it seems to give us new vitality, etc., its powers still are limited, otherwise the queen bee would boast eternal life.

Schweizerische Bienen-Zeitung, Oct. 1953.

1954 QUEEN BEES

3-Banded Italians

1-9 ..... $1.10 each
10 or more ..... 1.00 each

Geo. W. Moore
Shasta, Shasta Co., California

T W I S T
Bee Supers No. 1
Grade Supers No. 2
Write for Prices.
S. E. TWIST
201 Alpha St., San Francisco 24, Cal.

ITALIAN QUEENS

$1.00 each — Air Mail
Package bees at May prices
W. E. PLANT
Hattiesburg, Miss.

ITALIAN QUEENS

75c each, Airmail
No Packages
O. K. Anderson & Son
P.O. Box 193 Coffee Springs, Ala.

SUMMER PRICES

First Quality Italian Bees and Queens

Prices for rest of season:

2-lb. packages with queens	**$2.00**	**any number**
3-lb. packages with queens	**2.50**	**any number**
4-lb. packages with queens	**3.00**	**any number**
Untested queens	**.50**	**any number**
Tested queens	**1.00**	**any number**

Bees F.O.B. Queens mailed and clipped on request. All Merrill's bees and queens are backed with our 100% satisfaction.

MERRILL BEE COMPANY

Box 115 State Line, Miss.

ITALIAN QUEENS PACKAGE BEES

Packages With Young Laying Queen At the Following Prices:

	1-9	10-99	100-up
2 lb.	$3.75	$3.50	$3.25
3 lb.	4.75	4.50	4.25
4 lb.	5.75	5.50	5.25

Extra queens (any number) $1.25 each.

Reg. U. S. Pat. Off. Add 25c to above prices for Starline Stock

We guarantee safe arrival, a health certificate with each shipment, and prompt service.

Our Queens are reared under my own personal supervision, our aim is QUALITY NOT QUANTITY

LITTLE'S APIARIES P. O. Box 122 Shelbyville, Tennessee

GRAY CAUCASIANS

28 Years with Caucasians

Quality Bees and Dependable Service

Untested queens, 80c each, any number

BOLLING BEE CO. Bolling, Ala.

ITALIAN . . . . "GULF BREEZE" . . . . QUEENS

Good queens are essential in your operations. **GULF BREEZE** queens have won praise where used. We have the know how and equipment to assure the best quality.

Prices: 1-24, 80c ea. 25 or more, 75c ea. postpaid.

BESSONET BEE COMPANY Donaldsonville, La.

HOLLOPETER'S ITALIAN

QUEENS, are reared in the mountains of the North, from stock full if vim, vigor, and vitality. Queens reared by the veteran queen breeder, J. B. Hollopeter with 44 years experience.

— Prices —

1-9	**$1.00**	**each**
10-24	**.90**	**"**
25-49	**.80**	**"**
50-99	**.75**	**"**
100-up	**.70**	**"**

White Pine Bee Farms

Rockton, Pa.

CAUCASIANS CARNIOLANS

Will meet every need of the beekeeper. Both races have longest tongues, build up rapidly in spring, make white combs, and are gentlest of all races of bees. Queens $1.20 each, air mail from Florida yards. Ready June 15 in Tennessee. Send all orders here.

W. D. REAMS

Lowland Apiaries

Morristown R. 5 Tenn.

York's Quality Bred Queens

Two Strains

Queens Bred Up to a Quality—Not Down to a Price

York's Italians		Dadant's Starlines	
1-24	$1.00	1-24	$1.40
25-99	.85	25-99	1.30
100-up	.75	100-up	1.20

DADANT'S STARLINE HYBRIDS

Reg. U. S. Pat. Off.

The Preference of Leading Honey Producers

York Bee Company Jesup, Georgia

(The Universal Apiaries)

QUEENS QUEENS QUEENS

"ITALIANS"

We offer you young laying queens, shipped prepaid, airmail. Mark colonies with old and failing queens and replace when conditions are favorable. Queens available until November 1st. Clipped and painted at no extra cost.

1-9	.75 ea.
10-up	.70 ea.
Tested Queens	$1.50 ea.

Quality Does Not Cost — It Pays

THE WILBANKS APIARIES CLAXTON, GEORGIA

HONEY WANTED

Bryant & Sawyer

2425 Hunter St., Los Angeles 21

Those Dark
"OLD RELIABLE" Queens

$1.00 each; $90.00 for 100

For Island Hybrids, add 10c ea.

We have produced queens on large scale for 27 years.

Weaver Apiaries

Navasota, Texas

HARPER'S FAMOUS

High Quality Italian

Queens Sent Air Mail

75c each; 10 or more, 65c each

CARLUS T. HARPER

New Brockton, Ala.

TOO LATE TO CLASSIFY

FOR SALE: 100 cases new 5-lb. glass jars, 45-frame Root extractor, 3 h.p. steam boiler, Neises clarifier and filter. E. V. Reinert, Tracy, Minnesota.

WANTED—white and amber extracted honey, car loads or less. Write, stating best price. Honeymoon Products Co., 39 E. Henry St., River Rouge, Mich.

FOR SALE—12,700 red 53MM caps for honey jars; 2,000 gray 53MM caps for honey jars; 1 16-sheet cellulo honey filter with bump pump, perfect condition, one ton per hour capacity, $795.00; 5 10-ft. roller conveyers, almost new, $20.00 each; 3 10-ft. solid roller conveyors, $10.00 each; 5 standards, $3.00 each; 1 National Semi-Automatic labeler, capacity 1200 jars per hour, $395.00. Alexander Company, 819 Reynolds Road, Toledo, Ohio.

FOR SALE—40 10-frame extra heavy Kelley queen excluders. New, never used. Painted. 10 for $10.00 f.o.b. Harlen G. Johnson, 2000 South 16th St., Richmond, Indiana.

If you are taking time to read, why not read the best? Condensed to save you time. Illustrated to give you pleasure.

Modern Beekeeping

The Picture Bee Magazine

Box 210 Clarkson, Kentucky

U. S. Savings Bonds come in all sizes . . . . .
and grow bigger every year.

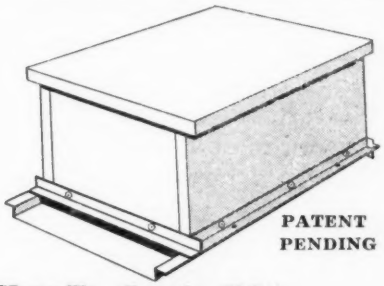
The Uni-Temp Aluminum Hive

- Cooler in summer
- Warmer in winter
- Exceptionally long life
- Light weight
- Rust free, rot free
- Never needs painting
- Accurately bee-spaced

Dealer territories open.

Ask for our Free Catalog

The A. H. HALE CO. **Hapeville, Georgia, U.S.A.**



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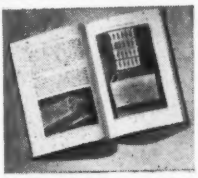

Secrets in Comb Honey Production Revealed

Here is the chance for you to get all of the secrets of successful comb honey production from one of America's leading comb honey producers, Carl E. Killion. "Honey in the Comb" by Mr. Killion will save you costly mistakes and show you time-saving ways of handling comb honey—from the hive to the ccstomer. **Price $3.00.**

Order your copy now from your nearest Root dealer or from The A. I. Root Company, Medina, Ohio.

EQUIPMENT FOR PROCESSING HONEY

(Continued on page 339)

knowledge, the **first** units on a commercial scale which embodied the principal of a continuous-flow rather than the batch system hitherto employed and still used by the majority of the honey processors.

Recently, Townsend (9) from the Apiculture Department at the Ontario Agricultural College, Guelph, Ontario, tested a continuous processing unit designed on an annular-flow basis. The results were satisfactory when the cooling was done in two stages: from 175°F. to 110°F. in the first stage and from 110°F. to 77°F. in the second stage. The volume of flow was 275 pounds per hour for recrystallized honey when cooling to 77°F. and 450 pounds per hour for liquid honey when cooling to 104°F. Pressures on cooling ranged from seven to 25 p.s.i.

References: (1) Austin, G. H., and C. A. Jamieson. An Evaluation of Some of the Factors Affecting the Stability of the Crystal Texture of Recrystallized Honey. Food Technology, Vol. VII (2):95-96, 1953.

(2) Dyce, E. J. Fermentation and Crystallization of Honey. Bull. 528: 1-76, Cornell Univ., Ithaca, N. Y., Oct. 1931.

(3) Dyce, E. J. Trends in Honey Packing Plants, Equipment and Methods. Gleanings in Bee Culture, Vol. 81 (10): 594-595, Oct. 1953; Vol. 81 (11): 667-669, Nov. 1953; Vol. 81 (12): 731-733, Dec. 1953.

(4) Lochhead, A. G., and D. A. Heron. Microbiological Studies of Honey. Bull. 116, New Series, Dom. of Can. Dept. of Agric. 1929.

(5) Marvin, G. E., W. H. Peterson, E. B. Fred, and H. F. Wilson. Some of the Characteristics of Yeasts Found in Fermenting Honey. Jour. Agric. Res. Vol. 43 (2): 121-131, 1931.

(6) Stephen, W. A. Studies on the Effect of Liquid Air, Rays and Emanations on Honey Yeasts. Abridgment of Part II of M.Sc. thesis presented to the University of Toronto, 1943.

(7) Stephen, W. A. Studies on the Thermal Resistance of Honey Yeasts. Scien. Agric. 22: 11, July, 1942.

(8) Stephen, W. A. The Relationship of Moisture Content and Yeast Count in Honey Fermentation. Scien. Agric. 26: 6, June 1946.

(9) Townsend. G. F. The O.A.C. Continuous-Flow Honey Pasteurizer. Gleanings in Bee Culture, Vol. 82 (2): 78-80, Feb. 1954.

GROWING ALFALFA SEED WITHOUT DESTROYING POLLINATORS

(Continued from page 361)

other poisonous insecticides on alfalfa during the period of bloom.

9. Not applying more chemicals, more treatments, nor stronger or weaker dosages than necessary to accomplish satisfactory control.

10. Storing and handling parathion, TEPP, aldrin, dieldrin, malathion, heptachlor, DDT, chlordane, calcium arsenate, toxaphene, and all other poisonous agricultural chemicals in a manner safe to persons, livestock, and wildlife.

GENTLE AND PRODUCTIVE

Italian and Caucasian package bees and queens. Full weight, health certificate, and live arrival guaranteed. Send your requirements now.

Prices:	1-24	25-50	100-up
2-lb. w/q	$3.00	$2.90	$2.85
3-lb. w/q	3.90	3.80	3.75
4-lb. w/q	4.85	4.75	4.65
5-lb. w/q	5.75	5.65	5.40
Queens	1.00	.95	.90

Prices after May 15th

	1-24	25-50	100-up
2-lb. w/q	$2.75	$2.65	$2.60
3-lb. w/q	3.60	3.50	3.40
4-lb. w/q	4.45	4.30	4.15
5-lb. w/q	5.25	5.15	5.00
Queens	.90	.85	.75

Farris Homan

Shannon, Miss.

3-BANDED ITALIAN QUEENS

1-24 ..... $ .80 Prepaid
25-99 ..... .75 Prepaid
100-499 ..... .70 Prepaid

Health Certificate and Guaranteed Safe Arrival

TERMS - One-third with order balance 10 days before shipment.

H. C. BRUNSON

P.O. Box 188 Hampton, So. Car.
Ph. 4641

BRIGHT THREE-BANDED ITALIAN QUEENS

Our Strain is from early imported Italians. Their behavior is more according to pattern than most other races. They are usually gentle, hardy, good workers, and not inclined to swarm. Use our queens and you will be in line for all the honey crops and have nice bees to work with.

PRICES, balance of season:

1 to 50 ..... 80c each
50 or more ..... 75c each

TAYLOR APIARIES

Box 249 Luverne, Ala.

DISEASES AND ENEMIES OF BEES AND BEEKEEPING EQUIPMENT

(Continued on page 341)

combs by having the bottom super flush with the floor, and supers tightly fitted and covered. Fumigation at regular intervals will also control mice in stored combs. Reduce the entrances of overwintering colonies in the fall to prevent mice from entering.

Skunks

Sometimes skunks are a serious pest. In cool weather the skunk raps on the hive. When a bee comes to investigate, the skunk eats the bee. While skunks may eat a considerable number of bees the main damage is the excited condition of the colony for several hours after their visit.

Skunks usually can be controlled by baiting. Strychnine placed in small chunks of meat and scattered around the apiary will usually kill the skunks. This method should not be used if there is danger of poisoning pets or other valuable animals.

Ants

These insects are a major problem in warmer areas. Colonies must be placed on stands for protection in some cases. The legs of the stands are immersed in oil to prevent the ants from crawling up the legs. It is usually easier to destroy the anthill to protect the colony in this state, than to use other methods of control. Ants may be controlled by making a deep, round hole in the hill with a crowbar, and placing carbon bisulfide in the hole. Cover the hill to confine the vapor.

Carbon bisulfide is very inflammable and will explode readily. Handle with care and never open a container inside a building.

Bears

Bears will wreck entire apiaries when they are in the vicinity. Electric wire fencing is probably the best control for this large mammal.

Others

Dragon-flies, robber flies, kingbirds, and bee-martins prey on bees. They cause only slight damage in most areas, but are serious problems in some queen-rearing regions.

(Continued on next page)

Good Queens and Package Bees. Young Three-Banded Italians only. Tops in production and gentleness. The choice of leading beekeepers for more than thirty years. Prompt shipment. New cages. More than full weight. No disease.

Prices:

	1-24	25-99	100-up
2-lbs. with queen	**$3.50**	**$3.25**	**$3.00**
3-lbs. with queen	**4.50**	**4.25**	**4.00**
Queens	**.85**	**.80**	**.75**

Queens shipped regular or air mail postpaid. Large orders of package bees, express charges collect. Small orders by parcel post. Postage added to prices quoted. Please order in advance if possible.

H. C. SHORT **Fitzpatrick, Ala.**

(Continued from previous page)

Poisoning

Large numbers of bees are killed each year through the improper application of insecticides. These insecticides often cause a marked reduction in the adult bees, thereby greatly reducing the surplus honey that would have been obtained if these losses had not occurred. Sometimes the loss of bees is severe enough to cause the death of the colony.

Some insecticides, particularly the arsenicals, can be stored in the pollen. When this pollen is fed to the brood, it will die and if enough of this poisoned pollen is used, the entire colony will eventually die.

Many of the newer chlorinated hydrocarbon insecticides, such as DDT, Chlordane, and Toxaphene, act as contact as well as stomach poisons, and usually would not be stored in the pollen in dangerous amounts because the bee collecting the pollen would be unable to bring it back to the hive.

Most of the loss due to insecticide poisoning could be avoided. Plants attractive to bees should not be sprayed with insecticides when they are in bloom. If it is absolutely essential to spray such plants when they are in bloom, the beekeepers within a radius of three miles of the field should be given at least 72 hours notice. This may enable them to move their bees before the blooming plants are sprayed.

The drifting of insecticides to fields next to the treated field often has caused a large loss of bees. Keep the drift to a minimum when treating fields with insecticides. Insecticides applied in the form of sprays do not generally drift as bad as dusts, and sprays should be used in place of dusts whenever possible. Less drift occurs with ground application of insecticides than with airplane application. Apply insecticides only during still weather; never during windy weather.

The End

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